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THE PUBLISHER.

ORIGINAL COMMUNICATIONS.

TREATMENT OF PNEUMONIA.[1]

BY M. HOWARD FUSSELL, M.D., PHILADELPHIA,

Assistant Professor of Medicine in the University of Pennsylvania.

Pneumonia is an acute infectious disease caused by the diplococcus pneumoniæ. The disease is in reality a pneumococcemia with a usual localization in the lung. The mortality depends upon the age, the social condition, the habits of the patient, together with the degree of pneumococcemia. The degree of the latter, it would appear, has much more to do with the percentage of mortality than has the amount of lung involved. A series of 465,400 cases of pneumonia collected by Wells shows that the mortality of pneumonia is 20.4 per cent.

Any method of treatment which professes to be specific, or even much superior to the average treatment, must show a mortality of much less than 20 per cent under all conditions in all sorts of patients, through a very long series.

As Musser and Morris in their article in Osler's System of Medicine have said:

"1. A number large enough to exclude

[1]Part of the paper read before the Kensington Branch, Philadelphia County Medical Society, Jan. 6, 1908.

the personal equation and other qualifying features must be analyzed.

"2. The age, sex, social circumstances, and habits, the environment, character of epidemic, season of year, and circumstances of the life-history of the host as well as of the pneumococcus, and many other details, must be constant features in the groups of cases arranged for comparison. The pneumococcus may at one time be virulent, at another innocuous, or the host susceptible or relatively immune. Neither the host nor the organism are constant factors. Thus far in all literature there are no such comprehensive analyses. The thoughtful physician is compelled, therefore, to put aside such vaunted specifics and subscribe to lines of treatment based upon physiological principles, derived from our knowledge of the action of the organism and the reaction of the host."

I feel that if any physician is asked what his mortality of pneumonia is in private practice he will answer much less than 20 per cent. The author published in 1892 a series of 134 cases from private practice with a mortality of 16.4 per cent, while Howard, of Montreal, published a series of 170 cases with only 6 per cent mortality. Doubtless the marked difference in these two small series was due to the age, social condition, or habits of the patients, elements which make greatly for high or low mortality.

So far there has not been discovered a specific treatment for pneumonia. The one which promises most is treatment with antipneumococcic serum. This has failed so far either because of its low potentiality or because there are several strains of pneumococci not to be distinguished.

Quinine in massive doses is an old treatment lately revived by Galbraith. The author has used it, but with no greater success than the symptomatic treatment to be described below.

Those of us who had the honor to sit under the never-to-be-forgotten teaching of Horatio C. Wood remember how that incomparable teacher impressed the value of veratrum viride in the early stages of pneumonia. He claimed that the disease was frequently aborted or at least made less severe by the "bleeding of the patient into his own vessels." The writer must confess to lack of courage in never having used this plan of treatment, but it has been tried by others less timorous, and like other specifics has been found wanting.

As the basis of treatment, four requisites stand out as all-important; they are at the disposal of all, rich and poor alike: *Rest, fresh air,* a *nurse,* and *watchfulness* on the part of the physician.

Rest.—This must be absolute from the beginning of the infection until convalescence is well established. In the beginning and during the course of the disease this is important, because the battle is between the resistance of the individual on the one hand and the poisoning by the disease on the other. Absolute rest conserves the vital forces, thus helping to resist the effect of the poisons on the economy. The patient should use a urinal and bedpan. His food should be given from utensils in such a manner that he need not sit up. This is easily managed by giving all liquids through a tube or a drinking-cup, and semisolids should be given with a spoon. Unless urgent need for stimulation exists he should not be disturbed for his medicine. Frequent physical examinations should not be made, not more than once in twenty-four hours, and when they are made the patient should be rolled on his side and not be allowed to sit up. The writer has seen the fever kept up, the intoxication increased, and death supervene in a child which was so badly trained that the approach of its nurse or physician was the signal for violent crying, and of tossing about in the bed. Rest is as important after the crisis as during the fever. The intoxication has lessened the resistance of the tissues and often actually destroyed their integrity, particularly of the heart muscle.

I have on record a case in which a woman of fifty-five had passed successfully through

a severe attack of pneumonia. The temperature was normal on the morning visit and the patient comfortable. Immediately after the visit was made the patient insisted upon leaving her bed and going to a commode. Immediate collapse with weak heart action occurred, and the patient died in a few hours.

Fresh air stimulates the patient, gives him oxygen as pure as the air of the locality allows, and inhibits the growth of the pneumococcus. Have the windows of the room wide open, day and night. Protect the patient by light wool underwear, and if necessary a cap on the head, and an abundance of bed covering. Protect the nurses by proper clothing. There is no reason for keeping heat out of the room. As a matter of fact, if the room is well heated and the windows and doors are open the atmosphere of the room is more frequently changed than if there is no fire in the room. When this method is spoken of the laity appear to believe that the reduction of the temperature is the point desired—indeed, some physicians appear to have the same idea. I have seen the temperature of the room reduced to 60° or 70° by reducing the heat admitted to the room, but not by opening the windows. The result was a cold room with air breathed over and over again. During the past week a case was seen in consultation, in which one lung was extensively involved; the room was cold, about 8x12 feet in dimensions, and both window and door tightly closed. Two or three persons besides the patient were constantly in the room. Could anything be more potent to depress a patient?

Opening the windows, and keeping them open all hours of the day and night, cannot be carried out in private practice without the complete concurrence of the members of the patient's family.

We still have much missionary work to do both among the laity and among physicians. The great mass of individuals are obsessed by the fear of "catching cold." Windows and doors of the sick-room are closed, and heavy bedclothing piled on the suffering patient, who lies in a drenching sweat. Teach them that fresh air never gives any one cold. Teach them that the vitiated air of our living, working, and sleeping rooms so lowers our vitality that infections constantly occur, hence "catching cold." In my wards devoted to pneumonia in St. Timothy's Hospital, Roxborough, the windows are always wide open. The patients are clothed warmly. They never complain of the cold, but always express themselves as comfortable. Since I have used this method my medication in pneumonia is almost *nil*, and so far my mortality small. That this means is not considered a "treatment" by some physicians is evidenced by the remarks of a good old doctor, with whom I saw a case. After I had fully spoken of the value of fresh air, he remarked, "Well, yes, doctor; but how shall we treat the patient?"

The Nurse.—In order to carry out the above rules, which I believe of paramount importance, a good nurse is a necessity. A trained nurse can always be had in or near our cities. If the patient is not able to pay for the services of a good nurse, then he should be sent to a hospital. In the country one is forced to do with a person not trained. In order that this person be of value, she should be instructed minutely and the importance of the details impressed upon her.

Watchfulness of the physician for changes in the patient are of great importance. For this reason two visits in the twenty-four hours should always be made, unless the case is in the hands of a competent nurse, who can report by telephone. Twenty-four hours is an abundance of time for a weakened heart to become so feeble that it fails before any remedy administered can be of effect. Especially should the doctor be watchful during the last days of the disease; then it is that complications so frequently occur.

These four valuable aids secured, each case must be treated upon its own merits. The only routine allowable is the measures above spoken of.

Chill.—The initial chill is usually over before we reach the house; however, when seen the comfort of the patient is best attended to by hot applications, hot water to the feet and especially to the small of the back. Occasionally a hypodermic of morphine is necessary to overcome the shock of the chill.

Pain.—Frequently the initial symptom is severe, agonizing pain referred to the chest or abdomen. Applications of cold or heat will often relieve this. Dry cups applied to the chest wall when this is the seat of the pain bring almost instant relief. Often, however, this pain is so severe that opium is necessary. The best method is the administration of morphine hypodermically; less of the opiate is used, and the effect is more prompt and certain. Two cases, both in elderly persons, have recently been treated in which collapse on account of pain seemed imminent; both were restored by the administration of a small dose of morphine hypodermically. Usually as the case progresses the pain becomes less severe, owing to the formation of an exudate or the dulling of the sensibility of the pleura, but often enough the pain needs the application of one of these methods during the entire course of the disease.

The hacking, unproductive cough due to the pleurisy is frequently so severe that opiates, preferably codeine because of its less severe constitutional effects, are necessary. A prescription such as the following is efficacious:

℞ Codeinæ sulph., gr. iij;
Aquæ dest., q. s. f℥iij.
Sig.: f℥j every two or three hours.

Or the same amount of codeine may be given in pill form.

Sweet cough mixtures are not to be used. However, if there is much expectoration due to bronchitis a mixture such as follows is valuable:

℞ Ammonii chloridi,
Ammonii carbonatis, ää ℥ij;
Misturæ glycyrrhizæ co., q. s. f℥iij.
Sig.: f℥j every three hours.

I most heartily believe that the cough is relieved by fresh air in the room, and by its employment the above remedies become less necessary.

As rest, complete rest, is one of the prime factors in the treatment of pneumonia, it follows that the great physical exertion caused by restlessness and delirium must be controlled. In hospitals it is the habit to control patients by straps. This is most reprehensible. The hospital authorities should supply sufficient nurses to allow each delirious patient a special nurse when conditions demand it. I have seen patients mechanically restrained practically kill themselves by their efforts to get relief from their bonds.

Usually doses of 30 grains of bromide of ammonium will be efficient. Frequently, however, hypodermics of morphine given tentatively, ⅛ grain, to be repeated when necessary, will keep a patient quiet for several hours. This is particularly noticeable in alcoholics.

The rest thus obtained allows the heart to recuperate, and the patient thus withstands his attack.

Often a case will go through an entire attack without stimulation of any kind. Certainly digitalis, strychnine, and whisky should not be given in a routine manner simply because the patient has pneumonia. Use them when needed, and use them in good and sufficient doses. When the blood-pressure begins to fall, the heart to dilate, the patient to become somewhat cyanotic, then is the time for stimulation. I believe that the use of the tonometer for measuring the blood-pressure is of the utmost value in deciding when to use stimulation.

The heart should be examined daily and its true condition always known. At the first sign of failure of pressure, digitalis, strychnine, or whisky should be given, care being taken that while enough is given the system is not overwhelmed by the drug. This can be told by frequent examination of the heart. Nitroglycerin lowers the blood-pressure. It is not a heart stimulant. Its

use in pneumonia, I think, is this: in the rare cases in which blood-pressure is high it may be given in order to dilate the peripheral vessels.

When large doses of digitalis are given I am quite certain that it is more efficacious when given in conjunction with nitroglycerin, because the nitroglycerin dilates the peripheral vessels; the digitalis stimulates the heart. If there is less peripheral resistance the effect of the digitalis is increased. Whisky I give routinely when the patient is a habitual drunkard or even a continuous drinker. Then it is of value. It is also of value when the heart begins to fail.

Fever usually need not concern us, but when it is excessive, 105° or over, cold baths may give excellent results. They make the patient comfortable and stimulate his circulation.

Never use the ordinary antipyretics—the coal-tar preparations. These drugs, while they certainly lower the temperature, unquestionably do so at the expense of depressing the heart, a thing to be guarded against.

Fresh, unbreathed air with laxatives and food are the most important remedies. The bowels should be moved daily either with salts or with calomel in divided doses.

High enemata of salt solution are most efficacious, and in certain severe conditions I have used hypodermoclysis with excellent results.

The mouth and teeth should be kept clean, the teeth brushed and sordes removed. Food is of the utmost importance. Enough must be given to sustain the system, but it must be selected, so that it can be easily digested and give rise to as little abdominal distention as possible. Milk in the form of junket, given plain or peptonized, is usually well borne and is certainly sufficient. If the milk is not well borne, albumin water and beef juice may be given with excellent results.

Avoid poultices, either home-made or in the form of the various pastes on the market. Both probably relieve pain, but this can be done much more efficaciously by cold or hot water coils, by cups, or by cold compresses. These pastes are sold by the carload and used much by physicians. They are absolutely useless in pneumonia, I believe worse than useless; they do not absorb moisture or poisons, as proven by Morris. The manufacturers claim they do. They are dirty, impede the breathing, and interfere with the examination of the patient. Even though the manufacturers' claims are legitimate, the manner in which physicians use them is senseless—a little bit is spread between the shoulders or on the sternum. Of course, this is valueless.

Bloodletting has its place. When the heart is laboring, the right heart much dilated, with a loud, accentuated second sound, a few ounces of blood removed will certainly give relief. The pulse will become strong, the breathing and cyanosis better. It is never to be employed when the pulse is feeble, due to general cardiac dilatation, and I have always feared to use it when the pulse is feeble from the toxemia.

Nephritis, which often occurs in pneumonia, needs little treatment; usually water, laxatives, and diaphoretics will do good. A favorite mixture of mine which apparently acts well is:

℞ Potassii bromidi,
Potassii citrat., āā ʒij;
Succus limonis, fʒss;
Syrupi, q. s. fʒiij.

Sig.: ʒij in water every 2 or 3 hours.

I have seen the urine clear up, the fever decrease, and the patient more comfortable under its use. At any rate it makes the patient feel that something is being done for him. In all cases the sputum should be destroyed, preferably by burning.

The treatment of pneumonia may be summed up as follows:

It consists of rest, air, and food for the patient; a skilled nurse; constant watchfulness on the part of the physician for any undiscovered symptoms; and a masterful inactivity as to indiscriminate drugging.

RADIUM THERAPY.

BY JOHN B. SHOBER, A.M., M.D., PHILADELPHIA,
Gynecologist to the American Hospital for Diseases of the Stomach, the Howard Hospital, and the Gynecean Hospital.

The history of the discovery of radium by Mme. Curie in 1898 is too well known to bear repetition on this occasion, and it would occupy too much time to enter into a discussion of its physical properties. Indeed, in the opinion of the writer, the subject is one which requires such exactness of expression in the statement of facts that it should be undertaken only by the trained and expert physicist. The physician who is fortunate enough to possess a working quantity of this rare and wonderful element may however with propriety discuss the results obtained and report the methods he has employed in making use of its various properties.

Pitchblende, the complex and compound ore from which radium is obtained, is found in Joachimsthal, Bohemia. From a ton of this ore, rich in the radioactive mineral uranium, only a small fraction of a grain of radium can be extracted. It also contains small quantities of the radioactive elements polonium, thorium, and actinium. Radium has never been isolated, but exists in the form of a chloride or a bromide.

The strength of a given quantity of radium chloride or bromide is the measure of its radioactivity, using the radioactivity of uranium as a unit.

When we speak of a 7000 radioactive radium we mean that it is 7000 times as radioactive as the element uranium.

The strongest radium bromide yet obtained has a denomination of 1,800,000. The market price of 10 milligrammes (1/6 of a grain) of 1,800,000 radium to-day is said to be $1000. The same quantity of 1,000,000 radium would probably cost in the neighborhood of $500, and 10 milligrammes of the Curie 300,000 radium chloride could with difficulty be obtained for less than $250 or $300.

Radium has nearly doubled in value during the past two or three years. This is due to the fact that the Austrian government has prohibited further exportation of the ore.

The writer is the fortunate possessor of three beautiful samples of strong radium: 10 milligrammes radium chloride, Curie, 300,000; 10 milligrammes radium chloride, Curie, 300,000; 10 milligrammes radium bromide, German, 1,000,000.

Radium is usually supplied in small glass hermetically sealed tubes 1/16 inch thick. As these tubes are easily broken, and as they have been known to explode, resulting in loss of the radium, and as glass prevents the passage of the beta-rays, I have placed the two samples of the 300,000 Curie radium in small aluminum capsules, because aluminum offers very little resistance to the beta-rays. These capsules can be screwed on a slender rod made of hard rubber or a silver rod which can be bent to any shape. For purposes of cleanliness or sterilization the rods can be inserted into closed tubes made of glass, aluminum, or celluloid. At present I am using celluloid tubes, as they offer little if any resistance to the beta- or gamma-rays. I have named this instrument a "radiode" (Fig. 1). The capsules are detachable and can be used for surface applications. The radiode permits the application of radium to any accessible cavity. The capsules can also be fixed in the end of catheters and applied to the esophagus, stomach, urethra, or the bladder. The sample of 1,000,000 German radium is contained

FIG. 1.

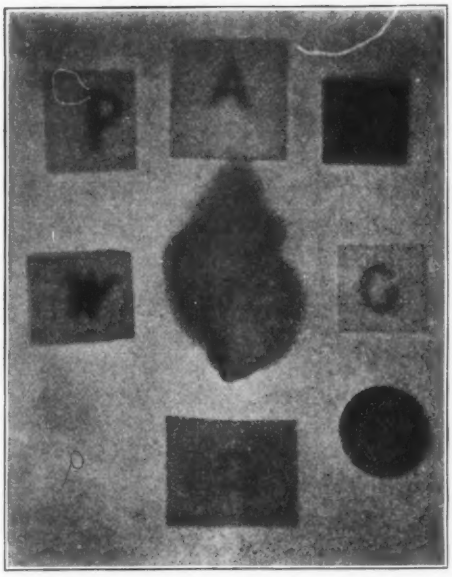

FIG. 2.

in a small metal cell having a thin aluminum floor. This cell can be screwed on a slender rod and thus used for cavity work. When not in use the aluminum capsules and metal cell are kept in lead-lined boxes in order to protect the operator and photographic plates from the influence of the radium rays.

Fig. 2 is a picture made with 10 milligrammes 300,000 Curie radium in the aluminum capsule, the object being to determine the relative resistance offered by various substances to the radium rays. The rays have penetrated the substances, casting shadows of the lead letters under them. It will be seen that aluminum 1/16 inch offers as little resistance as a cover-glass 1/200 inch thick, and less resistance than pasteboard ⅛ inch, rubber sheeting ⅛ inch, wood ¼ inch, and glass ⅛ inch. The round object is a penny; the central object is a shell. Radium rays, unlike *x*-rays, do not clearly differentiate structure from structure or different thicknesses of the same structure. Compare picture of shell in Fig. 3 made with *x*-rays with the same picture in Fig. 2 made with radium.

While radium rays do not differentiate clearly, they have immense penetrating powers. This is nicely illustrated in Fig. 4, where 10 milligrammes of 1,000,000 German radium cast a shadow of a pair of scissors through a granite paving-block 5 inches thick and a pamphlet of 33 pages. The time of exposure was 25½ hours. Note how the rays have penetrated the thin part of the blades.

The physical properties of the rays from a Crookes tube and from radium are almost identical, and it is not surprising to find that the same pathological conditions which are successfully treated by *x*-rays yield also to the influence of radium. The two agents may be used as complements to each other. Sometimes one may be successful when the other will fail, and *vice versa;* and, again, best results are often obtained by using them in conjunction with each other. For example, in my own practice all cases of inoperable cancer of the uterus or cervix receive general *x*-ray treatment of the pelvis every other day, and on alternate days radium is applied to the cavity of the uterus or cervix for one or two hours.

Much uncertainty exists as to the length of time which should be allowed for an

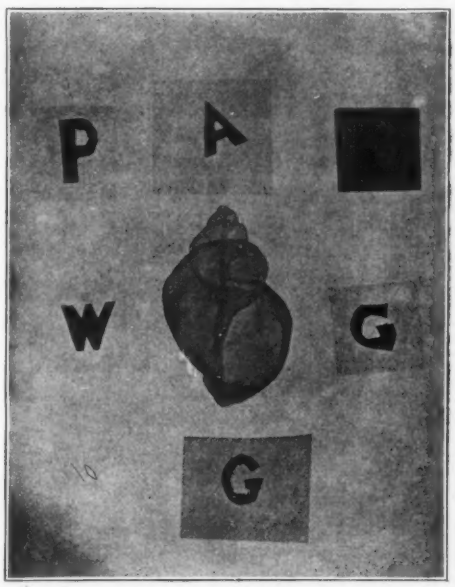

FIG. 3.

application of radium. This is a question to which no definite answer can be given. One should proceed cautiously and be governed by his experience and a thorough familiarity with the strength of the radium he is using. In general it may be said that we have erred on the side of safety. Perhaps the best guide is to determine the time required to produce a decided erythematous reaction on healthy skin. If it takes two hours to produce such a reaction in seven days, it would be safe to apply the radium

FIG. 4.

for one hour on the same spot once a week. The more I use radium the bolder I am with it. I have never seen a radium burn which has caused me much anxiety. A violent reaction followed the application of 300,000 Curie for one hour four times in two weeks in the case of a baby with an elevated angiomatous nevus of the face. It rapidly subsided, however, leaving an absolutely clean surface with no scar. One should be cautious in applying radium on healthy skin, especially about the face, for the purpose of relieving neuralgia. A short period of erythema usually results, but when applied too long pigmentation of the skin takes place, which may require months to clear up. My Curie radium requires one hour to produce a marked erythema on healthy skin. In neuralgia about the face I apply it for one-half hour on spots one-half inch apart along the course of the nerve. In sciatica I do not hesitate to allow it to remain one hour on each spot.

I might here state the conditions in which I have used radium, indicating the average time and intervals of application:

Warts, verruca vulgaris, one hour, interval one week.

Furuncle, one-half to one hour, interval two to four days.

Carbuncle, one hour, interval six to twelve hours.

Tubercular glands, one-half to one hour, interval four to six days.

Facial neuralgia, one-half hour on each spot, interval seven days.

Sciatica, neuritis, and herpes zoster, one hour on each spot, often using three capsules at a time.

Nevi and pigmented mole, one hour, interval two to four days.

Psoriasis, fifteen minutes over different areas, interval four to six days for each spot.

Lupus, one-half to one hour, interval four to six days for each spot.

Epithelioma, one-half to one hour, interval four to six days for each spot.

Cancer, one to two hours, interval two to six days for each spot.

Sarcoma, one to two hours, interval two to six days for each spot.

Trachoma, one-half hour, interval three to six days.

Keloid, one to two hours, interval three to six days.

Lumbago, one to two hours on different spots, often using two or three capsules.

Goitre, twenty-four hours, radium inserted into center of tumor and removed the next day.

Radium has remarkable sedative power. It relieves pain almost immediately, whether

organic, nervous, or neuralgic. Foveau de Courmelles (*Semaine Médicale,* Paris, Aug. 17, 1904) reports two cases of locomotor ataxia in which the girdle pains were cured, one by radium and the other by the Roentgen rays. The subjects were not informed in regard to the nature of the treatment, so he thinks that suggestion may be excluded. The writer has a personal letter from Dr. John Ege, of Reading, Pa., who is treating successfully a case of locomotor ataxia with radium. After four weeks' treatment the patient had gained 10 pounds in weight, the pains were greatly relieved, and he had recovered control of the bladder and rectum. He applies the radium along the course of the spine from occiput to sacrum for one-half hour in spots half an inch apart.

Many other pathological conditions have been more or less successfully treated with this wonderful agent. For instance, Robert Abbe reports cases of enchondroma, pigmented mole, melanoplakia, leucoplakia, granulated lids, seborrhea of lip, hypertrophy of tonsil, ganglion of wrist, Dupuytren contraction, angioma of face, tic-douloureux, and uterine fibroid.

All this may sound bizarre, but we are still in the experimental stage and are justified in trying this "subtle agent," so aptly termed by Abbe, in almost any condition.

In my experience the diseases which yield the best results, and which I undertake with some degree of confidence, are warts, furuncle, carbuncle, acute neuralgias, nevi, epithelioma of skin, secondary recurrent cancerous nodules, keloid, and lumbago. In addition I believe we have in radium a most valuable agent in the treatment of inoperable carcinoma of the cervix and uterus, always however when possible in conjunction with the Roentgen rays. In these cases, whether the *x*-rays are used or not, pain is always markedly relieved and hemorrhage, discharge, and odor are controlled, and life in comparative comfort is apparently prolonged. In one case, a metastatic nodule in the vagina, following a panhysterectomy for cancer of the uterus, melted away in five weeks under the influence of radium applications.

Dr. Robert Abbe was the first to use radium in exophthalmic goitre, and reported his first case in the *Archives of the Roentgen Ray* for March, 1905. Encouraged by the brilliant result, in April of the same year, I had an opportunity to treat one case and followed Dr. Abbe's technique (Fig. 5). The patient was a married woman, forty-two years old, the mother of three children. The family history was negative. She had always enjoyed good health until the previous year, when she began to complain of the following symptoms, which were increasing in severity: Dyspnea, palpitation, disturbances of vision, constant hacking

FIG. 5.

cough, profuse perspiration on exertion, constant and severe headache, nervousness, frequent tremors, and insomnia. During the previous eighteen months the tumor grew rapidly, attaining the size of a flattened orange. It involved both lobes and isthmus of the thyroid, the right lobe being much the larger. There was no Von Graefe sign, no exophthalmos, no fine tremor, no pulsation or bruit; the tumor was of firm, elastic consistency. The pulse was 110-128, with increased arterial tension.

Under cocaine anesthesia an aluminum capsule, containing 10 milligrammes of Curie 300,000 radium, covered with light gutta-percha tissue and placed in the end of

a narrow gauze wick, was plunged through a bistoury stab into the center of the right lobe and allowed to remain for twenty-four hours. The gauze and sutures controlled the moderate hemorrhage. The wound healed promptly and the tumor began to soften and slightly decrease in size. There has been no headache since the day of the operation. All other symptoms slowly improved. She seldom suffers from palpitation or dyspnea, has no disturbances of vision, no cough, no choking, is much less nervous, and has no tremors or shaking attacks. One year later the general mass of the tumor was somewhat smaller and decidedly harder than it was. She wore smaller collars. I saw her in May of this year and the improvement had continued.

I have met with very pronounced success in the treatment of carbuncle with radium. I will mention one case as a type:

John W., aged thirty-nine, weight 299 pounds. Massive carbuncle back of neck extending from occiput to nape of neck and from mastoid to mastoid; it was hard, acutely painful, and five small sinuses exuded slowly a drop or so of pus. There was fever, and patient was septic. Cleansed and dressed with mild ichthyol ointment. Radium, 10 milligrammes Curie 300,000, was applied over dressing one-half to one hour twice daily for five days. There was immediate amelioration of pain, with increasing discharge of pus, finally becoming profuse on second day. Mass became soft and fluctuating on third day, and was converted into a simple abscess cavity. Large sloughs were extracted through several sinuses on fifth day. Rapid resolution and complete healing without scar on tenth day.

Why and how are the results obtained with radium brought about? We do not know. Are the rays bactericidal, do they promote chemical changes in the tissues, or do they act mechanically? Microscopical studies of tissues submitted to the action of radium seem to indicate that cellular life is destroyed, resulting in a liquefaction necrosis which favors absorption. An endarteritis with destruction of the endothelial cells takes place, and if the exposure to the rays has not been too long we note an increase of connective tissue with complete destruction of embryonic and pathological cells, and stimulation of the normal cells to new growth. The effect of the Becquerel or radium rays upon living tissues is similar to the effect produced by *x*-rays.

IODALBIN—AN ORGANIC IODINE AS A THERAPEUTIC AGENT.

BY L. W. BREMERMAN, A.M., M.D.,

Formerly Professor Genito-urinary Surgery, New York School Clinical Medicine; Formerly Visiting Surgeon, West-side German Dispensary, New York; Visiting Surgeon, Oak Park Hospital; Member of American and Chicago Urological Association, and Member Chicago Medical Society.

The medical profession have for many years recognized the advantage gained in many conditions by the administration of the iodides, particularly potassium iodide, as well as their untoward effects, namely, the annoying and sometimes grave gastro-intestinal symptoms, the very disagreeable taste, the tendency to kidney irritation, frequently the large amount of drug necessary before the desired action is obtained, and, owing to the accumulative action, marked toxic effects result, as well as an idiosyncrasy, which is very common.

With these disadvantages in mind we have for years been seeking an iodine compound which would be devoid of all or most of the disadvantages and at the same time lose none of its therapeutic efficiency.

About four years ago I had brought to my attention an iodine compound named iodalbin, which at the time was in the experimental stage. I was requested to test it in every possible way and furnish a report as to whether or not the drug would prove to be a suitable substitute for the other iodine compounds.

After very thorough and careful experimentation, both in private practice and in

my dispensary work, I furnished a favorable report, which I requested should not be published.

I have been using the combination exclusively during the entire time since my report, and after four years I feel that I am fully justified in writing a favorable report upon this drug for the benefit of the profession.

Iodalbin is an organic compound containing 21 per cent of iodine in combination with egg-albumin. The iodine is held in chemical combination since it only reacts to the usual test, after the compound is broken down and decomposed.

Iodalbin is in powder form, of reddish color, tasteless (practically), and of a peculiar but rather pleasant odor. It is insoluble in water, acid, alcohol, and in fact all of the ordinary solvents, but is *slowly soluble in alkaline solutions.* The powder is not suggestive of iodine except in color, and is non-toxic.

The physiological action of iodalbin is the same as that of the iodine compounds in general. It is very readily assimilated, but its absorption is not as rapid as potassium or sodium iodide. It is eliminated through the kidneys, the skin, and the salivary glands.

The medicinal use of iodalbin may be divided into three great important divisions:

1. *Syphilis.*—In the treatment of this disease iodalbin has proven a perfect substitute for potassium iodide, but very much smaller doses are necessary.

The fact that potassium iodide contains 76 per cent iodine, while iodalbin has only 21 per cent, would naturally produce the belief that a greater quantity of the latter would be necessary. Experience proves that this is not the case, as I have never been compelled to administer over seventy-five grains during twenty-four hours; usually from ten to twenty grains three times daily is sufficient.

I might say a word concerning the method of administration in the treatment of syphilis.

In the ordinary routine treatment iodalbin plays no part, as it possesses no antisyphilitic virtue, like in this respect to potassium iodide. For this reason I do not recommend a mixed variety of routine treatment. Iodalbin will aid in healing the lesion, but mercury is the only curative agent. If a mixed form of treatment be established the lesion may clear up, due to the efficiency of the iodine compound while the amount of mercury is deficient.

The method I employ is the immediate administration of mercury just as soon as the diagnosis is made, either by mouth or intramuscular injections or by inunctions, administering sufficient quantity to overcome the lesion. The method continues as an interrupted symptomatic form for two and one-half years, and then for a period of six months a continual dosage of iodalbin as a substitute for potassium iodide, ranging from six to fifteen grains three times daily.

There is a certain variety of cases in which the lesions seem to be particularly malignant, when large doses of the mercury will not readily bring about resolution. These cases will require iodalbin to aid the mercurial, but must be discontinued as soon as the lesion disappears.

Another class of cases in which I prescribe iodalbin in conjunction with mercury are those in which the location of the lesion is peculiarly prone to produce untoward effects, namely, lesions of the throat, eyelid, or lips.

In all forms of nervous syphilis, with the exception of late sclerotic changes and locomotor ataxia, it is my practice to administer iodalbin as a standard remedy. If, however, there is a brain lesion which is a daily menace to the patient's life I administer iodalbin and mercury in combination.

In all forms of tertiary lesion the iodides are indispensable, and in those in which a long extended course of treatment is indicated iodalbin is invaluable.

2. *Metallic Poisoning.*—Iodalbin may be used as a substitute for potassium iodide in chronic metallic poisoning, as lead, zinc, arsenic, or mercurial, and as it is free from all the diagreeable disadvantages of potassium iodide it is, in my opinion, a far better drug to use.

3. *Rheumatism.*—In all forms of secondary or subacute rheumatism, where the joints are still swollen and the case seems to be obstinate, where patients are sometimes a little better and then again worse, iodalbin is particularly efficacious.

There are a great many other conditions, almost too numerous to be mentioned, in which iodalbin may be substituted for potassium iodide with marked advantage. Of kidney cases in particular is this true, for the potassium iodide proves sometimes to be very harmful, due to its irritating qualities. Iodalbin will cause a marked increase in urinary flow and can be used with benefit in cases of parenchymatous nephritis (croupous nephritis). I have seen a marked dropsical condition very rapidly disappear upon the administration of this drug.

In the true bronchial type of asthma, iodalbin is of service, for in these cases there is very apt to be stomach irritation, and potassium iodide would aggravate this condition and render it necessary to discontinue its use.

Iodalbin may be administered either in powder form or five-grain capsules. Begin, as a rule, with five or ten grains three times daily, preferably before meals; increase the daily dose, if necessary, five grains until the required amount is reached. No fear of any gastric disturbances need be taken into consideration, for the drug is only soluble in alkaline mixture, hence must pass from the stomach into the intestines before it is absorbed and assimilated. There have been under my care during the time that I have been using iodalbin numerous and exceedingly interesting cases, and I will endeavor to report a few of the more instructive.

J. J. C., laborer, married, came under my care in August, 1903. Family history negative. Previous history, relative to present condition, negative. Present history: Patient came to me with a peculiar sore on his lower left eyelid of nearly three weeks' duration. He informed me that he had been treated by several physicians, but that the sore was continually growing worse. There was not much pain, but he was annoyed by a continuous "watering" of the eye. The patient informed me that his general health was excellent.

Examination: I discovered on the lower left eyelid an oval-shaped sore extending from the inner to the outer canthus and to the margin of the lid; at the central point the margin of the lid was involved in the sore. The sore was indurated and was rather clean, with little exudation. On further examination I discovered a beginning typical secondary rash with involvement of the cervical glands and the epitrochlears. The patient informed me that he had frequented a house of prostitution about six weeks before and had intercourse. I questioned him concerning the woman with whom he cohabited, and was informed that as far as he could see she was free from disease. I could not elicit any direct history as to the means of inoculation, but the sore on the eye was the initial lesion of syphilis.

I immediately began treatment, which consisted in internal medication with local application to the sore. Increasing doses of mercurol and potassium iodide were administered until patient was taking nine grains per day of mercurol and forty-five grains of potassium iodide in milk. The patient's stomach went back on him, and I discontinued the use of potassium iodide, substituting iodalbin in the same dose. This had no untoward effect whatsoever on the stomach, and the gastric condition immediately cleared up. The potassium iodide was blamed for the gastric disturbance, because I knew what the mercurol would and would not do. In four weeks the lesion was entirely healed, with only a slight deformity due to cicatrization, pulling the lower lid downward and preventing the lids from completely closing. At this time I began the use of iodalbin, and kept the patient on mercurol for one year continually. I then gave him a rest for a few weeks and returned to the treatment again, which lasted for one and a half years. At this time I repeated the iodalbin, keeping him on ten grains three times daily for six

months. The patient made an uninterrupted recovery.

Another interesting phase of this case was that the patient was married. His wife was seven months pregnant. She was infected by her husband and came under my treatment, which consisted of large internal doses of mercurol. I asked permission to deliver the child, which went to full term and was born, as far as I could tell by a very careful examination, free from syphilis. Implicit directions were given the mother in relation to the care of the child. Eight weeks later the mother brought the child to me suffering with ulcerations surrounding the anal opening. I diagnosed the case as syphilis and began inunctions of unguentum hydrargyri. The child became very much worse, and the mother took it to the hospital, where about six weeks later it died. The mother continued her treatment faithfully, and about one year later she became pregnant once more, but aborted at about three months. She also made an uninterrupted recovery, and just prior to the time I discharged her she became pregnant once more. I continued her however on iodalbin ten grains three times daily during the entire pregnancy. She was delivered at the New York Lying-in Hospital of a normal child. Since moving to Chicago I have lost observation of this family, but up to the time I left they were all in normal and excellent condition, apparently.

W. W. Q., male, twenty-four years old, chauffeur, single, came under my care December 31, 1903. Family history negative. Previous history negative. Present history: Patient made his own diagnosis of syphilis, and he was correct. Several weeks prior he was exposed. Examination showed initial lesion on penis and a marked and profuse secondary eruption covering the entire body.

Treatment: Began increasing doses of mercurol, but the condition became worse, so I immediately changed treatment to the intramuscular injection of mercury salicylate in increasing doses. Condition still began to get worse, and I discontinued the injections in favor of the inunction of unguentum hydrargyri in frequent and rapidly increasing doses. He suddenly became markedly salivated, due to the accumulated action of the mercury from the injections which had been given, which were delayed in their action, and the patient got the benefit of the accumulation. His condition was rather serious.

I stopped all mercurial treatment and placed him immediately upon iodalbin, working his dose up rapidly to twenty-five grains three times daily. His symptoms promptly cleared up, and I continued the iodalbin alone for several weeks, when I began to administer mercurol, beginning one grain three times daily, increasing one grain every third day. This continued until I had the patient taking six grains three times daily, when I increased the dose of iodalbin five grains every second day. This continued until the patient was only taking mercurol, but I found it necessary to increase the dose to twelve grains three times daily, which he took continually for nearly three years uninterruptedly. He showed no sign nor symptom of the disease whatsoever after the beginning conditions were eradicated.

Just prior to my leaving New York I placed the patient on iodalbin, having discontinued the mercurol. He was taking thirty grains a day and has continued to do so, I presume, until the present time.

In all the cases that I have administered iodalbin, I have only had one in which I found it necessary to discontinue the drug from apparent untoward effects. This patient suffered with rather severe nausea and vomiting. I could not understand the cause, so discontinued the use of the iodalbin, fearing that there might be an individual idiosyncrasy, but the vomiting and nausea did not cease, and I learned that the patient was drinking incessantly. He eventually drifted from under my care.

A. McB., female, aged fifty-five, widow. Family history negative. Previous history: Had been well up to last July, when she had an attack of appendicitis, for which she was operated upon.

In the early part of August I saw the

patient for the first time, having been called in consultation. Patient was in fair physical condition and was recovering slowly from the effects of the operation. There was a sinus in the abdominal wound which refused to heal and poured forth a large quantity of secretion. Upon examination this proved to be urine, showing that during the course of the operation the ureter had been injured, resulting in a urinary fistula.

I recommended ureteral catheterization first to endeavor to pass a catheter up the injured ureter to drain the kidney, and thus facilitate the healing of the fistula, and also to ascertain whether or not there was another normally functionating organ on the opposite side. I was unable to get the catheter beyond a point six inches from the bladder on the right side. I used several catheters of different size, but was unable to pass the point of injury. The other side drained a normal sample of urine, and from the tests for function I found the left kidney was normal in this respect as well. After another attempt to pass a catheter into the pelvis of the right kidney, which proved unsuccessful, I recommended ureteral anastomosis, and if I found this impossible I requested consent to nephrotomize. A few days later I operated, and after working for some time trying to break up a mass of adhesions, I thought it the safest procedure to remove the kidney. This was done, and the kidney was found to be nearly twice the normal size; upon section it showed areas of pus infection and the pelvis contained a large amount of pus, and as it proved I was fully justified in removing the kidney. It was far better for the patient that I was unable to anastomose the ureteral ends. From the operation the patient made an uninterrupted recovery, but two days later my attention was called to a sore which had developed upon the region of the great trochanter on the left thigh. The tissue rapidly broke down, forming a foul, sloughing sore. Careful treatment seemed to do little good, and the condition became worse. There was no history of a specific condition, but nevertheless I concluded to place her upon iodalbin and keep a watchful eye upon the action of her *one kidney*. I began with five grains three times daily, and gradually increased the dose until she was taking forty-five grains daily, which dose I kept her on for three months continually. The sore began to heal, and in a short time was completely cured.

The particularly interesting feature of her case is the fact that there was not the least kidney irritation following the use of the drug.

The urine was watched closely—in fact an examination was made almost daily. The woman at the present writing is entirely recovered and enjoying excellent health. I have discontinued the use of iodalbin in her case.

In summing up the therapeutic advantages of iodalbin over the salts of the alkalies used ordinarily (potassium, sodium, etc.) we find:

1. It is practically tasteless, whereas the iodides commonly used are very distasteful.

2. It passes through the stomach unchanged and does not cause gastric distress, as do the alkaline iodides.

3. Being stable and insoluble it may be administered in powders, tablets, or capsules; in water, coffee, chocolate, wines; and, in fact, any beverage or food not alkaline in reaction.

4. It passes through the stomach unchanged, but it becomes dissolved in the alkaline secretions of the intestines and is slowly absorbed.

5. The drug becomes soluble before absorption, and does not produce the exaggerated effect which follows the absorption of the very soluble iodides of the alkalies.

6. A less quantity of iodalbin is necessary to produce an effect than the alkaline iodides.

7. The substance is non-toxic.

8. It may be used for the same purpose and under exactly the same conditions as the iodide of potassium and sodium.

808 Chicago Savings Bank Building.

THE RELATIONSHIP BETWEEN STAUUNG-HYPEREMIA AND OPSONIC INDEX.

BY JOHN C. HOLLISTER, M.D.,
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If one ascertain the opsonic index of fluids obtained from chronically infected tissue areas he will find that this index is in the large majority of cases below that of the patient's general circulation. After the use of a Bier stauung-apparatus he will find the local index to have been raised toward, or quite to, that of the general circulation. This is probably one reason for the beneficial results following the use of such apparatus.

It is the purpose of this article to briefly review the causal factors that Bier himself calls attention to in explaining the effects of his methods of producing hyperemia, and then to give experimental data that will show the truth of the above statement.

Bier says hyperemia is of value because (1) it has a pain-quieting action; (2) it has a bactericidal or attenuating action; (3) it has a resorption action; (4) it has a "dissolving" action; and (5) it has a distinct nourishing action.

It is under the second heading that our experiments fall.

1. *As a Pain-quieting Agent.*—This is illustrated especially in cases of chronic rheumatism (by active hyperemia) and in gonorrheal arthritis (by passive hyperemia). The explanation is that active hyperemia carries away poisonous materials which act as irritants on the nerve endings, and passive hyperemia dilutes them.

Views of other investigators are given as follows:

Ritter says that hyperemia diminishes the sensibility of the nerves by causing an edema in the tissues, just as Schleich has found in his experiments.

Bum considered this effect of passive hyperemia to be due to the fact that more fluid was brought into the joint and prevented the rubbing together of inflamed surfaces.

Bier does not agree with the view that inflammatory hyperemia causes pain. He thinks the injuries to cells and nerve endings cause the pain, and the tendency of the hyperemia following is to lessen it.

2. *The Bacterial Destroying Action of Hyperemia.*—Nötyel's experiments on rabbits are noted. (Sixty-seven rabbits were injected by virulent toxic doses of anthrax and streptococcus in areas which were under the influence of strong hyperemia; only 16 died. Later the same animals were injected without the hyperemia, and all died.)

Laqueur found that the bactericidal strength of blood obtained from a finger after the application of a constricting band was considerably higher than before the hyperemia.

Wessely's experiments are especially interesting. This investigator (Bier says) found that after he had applied moist heat to a rabbit's eye the amount of albumen contained in the eye humor was much increased. He then argued that the antibodies in the blood could be increased in definite places by causing localized hyperemia; so he advised combining serum treatment with hyperemia. It is exactly along this line that our experiments with opsonins lie.

Bier himself found abundant pure cultures of staphylococci from large acute abscesses. He applied hyperemia, and after a short time found these abscesses sterile.

Buchner considered that with the congestion occurred an increased accumulation of leucocytes, which by secreting alexins in the serum aided in killing the infectious elements.

Heller considered that passive congestion "held back" the nitrogenous products of bacteria, and these caused destruction of the bacteria themselves.

Cornet added to Heller's view that these nitrogenous retained bodies also stimulated the tissues to new formation of connective tissue and scar formation, which encapsulated and made harmless the focus.

Richter considered the action of passive hyperemia nothing more than the establishment of a mild inflammation, and that the results depended upon the disturbances of circulation with resulting "randstellung" and emigration of leucocytes.

Hamburger's views were as follows: "By congestion the blood becomes richer in carbonic acid, and the bactericidal power of the blood is thus raised because the acid itself is bacteria-destroying; under its action the red cells swell, water is withdrawn from the serum, its concentration is increased, and finally the serum takes up the diffusible alkali. The latter occurs partly because with the added concentration of serum the percentage content of the alkali is increased, partly because from the influence of CO_2 alkalies leave the blood-corpuscle for the serum, and by breaking down the albuminates of the serum diffusible alkalies are set free." The influence of alkalies upon the antibacterial action of the blood fluids Bier says is well known. According to Von Behring the susceptibility of rats to anthrax is dependent upon the alkalinity of the blood.

Bier speaks of the increased local leucocytosis that has been found to be caused by passive congestion, and upon which Metchnikoff and his followers consider the bactericidal action of blood depends. Bier then says: "From what has been said it must be concluded that the passive congestion considered purely theoretical according to modern ideas and theories must be a justifiable and logical means of procedure against diseases which are caused by bacteria, since it stands opposed to none of these theories, but on the contrary is justified by them all." Bier says further that he considers Metchnikoff's phagocytic theory as the most important, and then goes on to say that he himself considers inflammation itself a *physiological process* and *beneficial*. It is nature's way of warding off infection, and it is because hyperemia causes the increase of the different factors of the natural inflammatory processes that the good is accomplished. He considers that antiphlogistics really cause an accumulation of these natural processes of reactive inflammation and not a hindering of them. "There is to-day no better means of sustaining and strengthening the useful and curative inflammation in all its manifestations than the stauung-hyperemia which we are able to produce by the bandage and suction apparatus. For lasting results, *passive* hyperemia applies more particularly to acute bacterial diseases and the active hyperemia to chronic and non-bacterial diseases."

The importance of broadening and slowing the blood stream over the somewhat higher content of carbonic acid or nitrogen is emphasized. The former "bring the injured tissues into more intimate connection with the curative blood ingredients (serum, leucocytes, etc.) than is possible in the swift-moving arterial current."

3. *The Resorptive Action of Hyperemia.*—Bier calls attention to the fact that resorption really takes place by means of the blood-vessels and not by the lymphatics. This applies also to the digestive tract, where water, soluble salts and carbohydrates, peptones, and some unaltered proteid bodies almost entirely are absorbed by the blood. Resorption from the peritoneum is mainly through the blood-vessels and not through the lymphatics, as many have thought. The taking off of small bodily ingredients is accomplished by the latter. Many experiments are quoted to substantiate the above.

"We know little about the possibilities of influencing the lymph current artificially, but we can the blood current."

Klapp found resorption was markedly increased by active hyperemia, and although temporarily retarded by passive hyperemia the final result is actually one of stimulation, for when the bandage is removed resorption is so much increased that the total final effect is more than with-

out the use of the apparatus, unless this is kept on too long.

"Resorption is most retarded by anemia" (*i.e.*, Esmarch's bandage). "The value of the passive congestion is therefore to delay the resorption of the toxins of localized infections until the living tissues can so act (we do not know how) on them and render them harmless."

4. *The Dissolving Action of Hyperemia.*—Bier says this is shown by its action upon blood coagula or deposits in and about ankylosed joints. "If these are absorbed they must be first dissolved, and that hyperemia can accomplish this there is no doubt. In cases presenting visible nodes so treated the nodes are caused to disappear by both active and passive hyperemia." This action is compared with the tissue-dissolving action of inflammations, to which the terms "autodigestion" and "autolysis" are given, and also with the maceration and dissolving of the skin, over which is allowed to flow the aseptic alkaline fluid from an edematous extremity.

Billroth is quoted as saying that one of the actions of the living cells is in the fact that under certain conditions they cause connective tissue and fibrin fibers to be metamorphosed to a soft, jelly-like condition.

5. *The Nourishing Action of Hyperemia.*—Bier claims he has no doubt about this action, but frankly admits that it is much harder to prove the exact underlying reasons here than those of the former factors. He writes further on the subject by asking the following two questions:

1. "Can we bring about a condition of overnourishment of our normal tissues by hyperemia; can we cause artificially larger bulk by influencing physiological growth?"

2. "Can we hasten or strengthen regeneration of tissue by hyperemia?"

In answer to the first question he says: "There are some cases in which a true muscle hypertrophy is due to a venous thrombosis, but after considering carefully the microscopic reports it cannot be definitely decided whether there is present an actual hypertrophy or a first stage of degeneration of the muscle fibres." He has never seen a true muscle hypertrophy following a mild grade of stauung-hyperemia. Both forms of hyperemia do cause an active growth of superficial epithelium, as is the case in many instances of chronic hyperemia (hair also). "On the contrary, to my knowledge there is not a single instance known in which the secreting gland epithelium has been hypertrophied by hyperemia."

Chronic congestion can cause an increase in connective tissue (kidney, liver, spleen). Increase in length and breadth of bones also can be brought about by chronic hyperemia.

The influence of hyperemia on regeneration is illustrated by noting that a rapid change of soft tuberculous tissue to fine scar tissue is brought about under the influence of stauung-hyperemia, and Bier thinks the surrounding of an inflammatory focus by connective tissue scar formation plays a large part in the defenses against infection.

Bum found that the external callus about a fracture was markedly stimulated by stauung-hyperemia, and the internal callus somewhat less so.

Finally, Bier says: "While the actual influence of hyperemia upon the physiological

	Date.	O. I. of exuding fluid before Bier treatment.	O. I. of exuding fluid after Bier treatment.	O. I. general circulation.
Boy A. Tuberculous Sinus	Nov. 23	0.3	0.7	0.8
	Dec. 4	0.6	1.2	1.4
	Dec. 6	0.8	1.0	1.6
	Dec. 10	0.7	1.2	0.9
Boy B. Tuberculous Fistula	Jan. 28	0.8	1.5	1.8
Boy W. Tuberculous Glands	Feb. 16	0.4		1.5
	Feb. 20	0.4	1.4	1.8
Boy P. Tuberculous Fistula	Jan. 28	1.0	1.8	1.9
	Apr. 2	0.9	1.1	1.0
Boy O. Tuberculous Fistula	Jan. 28	1.0	1.2	1.0
	Apr. 2	0.5	0.9	1.1
Boy B. Tuberculous Fistula	Jan. 28	1.3	1.5	1.3
	Apr. 2	0.6	1.0	0.8
Girl G. Tuberculous Fistula	Apr. 2	0.5	1.0	0.9

growth of an organ and upon the nourishment of a normal tissue is limited to superficial epithelium (not universally so) we cannot doubt that regeneration is considerably hastened by active and passive hyperemia. Functional hyperemia is active. The hyperemia which serves particularly for the building up of tissues is passive."

The statement made at the head of the article is based upon some experiments, the results of which were so uniform that the truth of the statement seems quite satisfactorily proved. Some exuding serum was collected from the open ends of chronic sinuses or fistulæ and its opsonic content noted. Then the cup was applied for the usual one-half or three-quarters hour intermittently, and finally some of the serum at that time exuding was collected and its index estimated. It was found that without exception to begin with the patient had a higher opsonic content in the generally circulating fluids than in the locally diseased areas. Then it was found after the use of the apparatus that the opsonic content in the fluid without exception approached to or quite reached that of the general circulation.

The table is self-explanatory and hints at a very good reason why we should combine, in our therapy against bacterial diseases, the use of vaccines by which we can raise a low *general* opsonic index with the use of some such device as Bier advocates, and by which we can draw into the more indurated tissues these fluids with the higher opsonic content.

A CASE OF TUBERCULOUS ARTHRITIS OF THE KNEE, APPARENTLY MUCH AGGRAVATED BY BIER'S CONGESTION.

BY DR. J. J. A. VAN KAATHOVEN,
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This patient, a boy of nineteen, without suggestive family or medical history, entered Dr. Charles H. Frazier's service at the University Hospital September 17, 1906, complaining of pain, swelling, and impairment of function of the right knee. He gave a history of an attack diagnosed as "water on the knee" four years ago, apparently the result of frequent slight injuries. After three months of unsuccessful palliative treatment an attempt at aspiration was made, which proved unsatisfactory owing to the thickness of the exudate. By means of incision a thick yellow fluid was removed. Some stiffness resulted from this operation, but the patient was able to go about his business.

The winter previous to his admission the patient fell, bending his leg under him. The injury kept him from work for some time. In the spring of 1907 the joint became spontaneously sore, stiff, tender to a slight degree, and somewhat swollen, all symptoms being insidious in onset and very gradual as to progress.

On admission the physical examination proved negative in all respects save in regard to the affected joint, which presented the signs of a low-grade inflammation with moderate effusion. Extension was applied, great comfort resulting. Two days later Bier's congestion treatment was instituted, the bandage being applied one hour daily. After two days of this treatment conditions became distinctly aggravated. There was very severe pain, greatly increased swelling, and considerable contraction of the muscles. The hyperemia treatment was discontinued and a cast was applied. Two days later the passive congestion treatment was again instituted. The patient was instructed to apply it himself, was discharged from the hospital, sent to the country, and advised as to hygiene and forced feeding.

After an interval of about two weeks the patient returned for treatment, with his knee in a worse condition, great muscular contraction and consequent fixation, tenderness, pain, swelling, and disability being present.

Extension was applied, giving great re-

lief as before, although the joint remained exquisitely tender on pressure or motion. After about three weeks of treatment by absolute rest, the knee remained much swollen and tender, showing distinct fluctuation. Aspiration was performed, and the joint irrigated with 1:100 iodine solution.

From this time on the joint improved somewhat, the temperature running to about 100° at night, the pulse from 100 to 120. A tuberculin test made at this time proved negative, the leucocyte count being 14,400. Examination of the aspirated fluid failed to show the presence of the tubercle bacillus.

The patient was discharged November 30, 1906, and sent to Atlantic City, where he remained until January 22, 1907. During his stay he gained some weight but developed a chronic laryngitis, which proved to be tuberculous in character, an evening temperature, and a pulse running about 120 to 130. An apical lesion was discovered at the same time. The knee was not improved, great fixation, distention, tenderness, fluctuation, and contraction being present.

Excision was decided upon and carried out the day following admission, and though severely shocked the patient made a good recovery. The wound healed gradually, but his general condition did not improve. After about five months of hospital treatment he was discharged suffering from his pulmonary and laryngeal tuberculosis, with a temperature fluctuating from 98° to 103°, and a pulse constantly above 120.

The pathological examination firmly established the diagnosis of tuberculous arthritis and osteitis, notwithstanding the leucocytosis and negative tuberculin test.

Some months after his discharge the patient succumbed to his pulmonary lesion.

If one may judge from the literature, the above case is extremely unusual if not unique. Careful search of reported cases failed to produce a single similar one.

In a recent article Bier draws the following conclusions: The only contraindications to the hyperemia treatment in tuberculous arthritis are amyloid changes, severe pulmonary involvement, large joint abscesses, and marked malposition of the affected parts. He then reports a series of 17 cases of carpal tuberculosis with 15 cures, 13 tarsal cases with 8 cures, another tarsal series of 13 cases with 8 cures, and one case of shoulder tuberculosis with absolute functional recovery.

In 44 cases he operated but eight times, and 8 cases did not respond to treatment. Functional end results are excellent and permanent, as illustrated by two cured cases not treated for fourteen and fifteen years respectively. The author does not mention a single instance in which the treatment aggravated the lesion. In a long series of unselected cases, the wrist gave 88 per cent of cures, the elbow 72 per cent, the tarsus 61.5 per cent. In 5 cases of knee tuberculosis, 3 were cured, 2 with normal mobility. Bier distinctly states that the knee-joint is the least adapted to this form of treatment.

Hobs after testing 200 cases gives a favorable report of the results of this treatment, not stating any untoward effects. Luxemburg, after a series of 23 cases, arrives at the conclusion that Bier's treatment results in movable joints. He obtained complete cure in 7 cases, and great improvement in 8; the remaining 8 cases are not mentioned.

Gillman, Henle, and Mikulicz all claim good results from this treatment after a thorough trial; they do not report any unfavorable cases.

Edwin Beer reports a series of 4 tuberculous knees, all improved by the congestion treatment, though the lesions were far advanced.

In the above cited case, none of the contraindications as stated by Bier were present. It was an incipient case and seemed particularly suited to this form of treatment. The hyperemia was carefully and gradually induced, according to the rules laid down by the originator of the method.

The sudden alteration in the course of the disease, changing from the gradual, slowly progressive type of tuberculous

arthritis to the acute form, immediately after application of the Bier treatment, seems to establish the fact that the congestion greatly aggravated the condition. This position is furthermore strengthened by the subsequent increase of symptoms due to persistence in the treatment, notwithstanding the aid of hygienic and climatic advantages. It is reasonable to assume that in a case of tuberculous arthritis suddenly awakened from a quiescent to an acute stage, the active hyperemia might readily disseminate the bacillus to other parts of the body and cause, as in this case, pulmonary or other forms of tuberculous affections.

This argues that though the Bier treatment is safe and beneficial in the vast majority of cases of tuberculous arthritis, the surgeon should guard his prognosis when passive hyperemia is instituted and watch his patient with the utmost care during the first applications of this treatment.

HYPEREMIA TREATMENT OF ACUTE AND CHRONIC SURGICAL AFFECTIONS.

BY MACY BROOKS, M.D.,

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Methods of producing hyperemia as proposed by Bier may be divided into two classes, the active and passive. The former is induced by such measures as massage, electricity, and especially by means of warm applications and heated air. The relief obtained from hyperemia in both its active and passive forms is one of the most striking features of the method. Bier mentions in particular the benefit obtained in gonorrheal rheumatism, and his claim in this respect I have frequently corroborated at the Philadelphia Hospital by relieving the exhausting pain of this affection in from twenty-four to forty-eight hours by the application of a constricting bandage used twice daily, for two hours at a time. Aside from the rapid relief of pain the convalescence was materially shortened.

The relief of pain as suggested by Ritter's experiments is probably due to a serum infiltration anesthesia. Bier believes the pain is relieved because its cause is combated by the hyperemia. Among the diseases which he states are benefited or cured by passive hyperemia are various forms of chronic arthritis, the acute varieties of joint inflammation, and phlegmonous processes. Neuralgia, on the other hand, seems to respond more readily to active measures.

The arrest of an infectious process after hyperemia and its rapid absorption can be attributed to either the death of the bacteria or at least to their attenuation, so that they are less active. In animal experimentation inoculation followed by hyperemia resulted in a few deaths, the majority of the animals living, whilst control animals injected with the same bacteria in the same quantity, but not treated by hyperemia, all died. These experiments apparently show conclusively the protective action of hyperemic methods.

The serum obtained as a result of artificially produced edema in an infected member possesses some bactericidal property which reduces the virulence of the microorganism, and this property is not observed in the serum of a non-inflammatory part. The bactericidal power has been attributed to the presence of leucocytes in great number, faulty metabolic changes, increased alkalinity of the serum, and various other factors. It can be conclusively stated, however, that whatever the active agent may be, hyperemia is certainly the factor which activates it and enables it to attack most quickly and satisfactorily the excitant of the inflammatory condition.

To successfully and scientifically use passive hyperemia its dangers should be fully understood. There can be no doubt that many ineffectual or disastrous results were due to faulty technique.

Abscess and pressure necrosis may result

from too firm application of the constricting band, due, as suggested by Lesser, to the area of lessened resistance caused by pressure, thus providing an area of lessened resistance for the infection. This complication may be guarded against by judgment in the application of the bandage, by changing its position, and by occasionally releasing the pressure.

Thrombophlebitis constitutes a distinct cohtraindication to both active hyperemia produced by heated air and passive congestion. Several cases are reported in which death was apparently hastened or induced by the use of this method.

As to the method of application, to produce passive hyperemia in an extremity, a Martin rubber bandage or a muslin bandage is employed, applied with sufficient firmness to compress the vein walls, while the arteries are either not affected or only to a slight extent. In using the muslin bandage four or five turns may be made; then the bandage is roped by twisting it several times during each turn. The amount of edema is dependent on the degree of pressure. The subcutaneous veins first swell. The skin gradually becomes dark-red, and in two or three hours it is universally blue-red and edema begins to appear, the pressure in this instance being slight. There should be felt a pleasant warmth over the part. Cold edema is to be avoided. After twenty hours the extremity constricted measures about 2 or 3 centimeters more than before the bandage was applied. When continuous pressure for a long period is applied, twenty hours or more, the position of the constricting bandage should be changed in order not to devitalize the underlying tissues. In case it is advisable to limit the congestion to the affected focus the distal portion of the extremity may be firmly bandaged, although this method has generally been dropped by Bier. If correctly applied pain or other uncomfortable sensation should not be experienced.

To produce congestion of the entire arm, a tubular bandage is placed around the shoulder, running from the axilla to the point of the shoulder and held in place by a bandage round the neck. It should not be applied longer than twelve hours. Venous stasis of the head is easily produced by a bandage placed about the neck, sufficiently firm to produce cyanosis of the face, and in severe affections edema; it should not cause any severe discomfort.

The use of dry cups or suction apparatus to produce hyperemia is indicated in many portions of the body where the application of a bandage is obviously impossible. The suction is produced by means of an air pump, and numerous ingenious appliances are now devised for various portions of the body. The forms of apparatus employed by Bier are now being used in this country and can be easily secured from instrument-makers. Those of glass are most satisfactory because of their cheapness and ease of cleansing, and more particularly because the enclosed member can be closely inspected during treatment. The air is pumped out without producing pain, and the degree of hyperemia noticed through the glass, when sufficiently great, is maintained for several minutes, and then air is permitted to enter. This intermittent treatment, five-minute hyperemia and three minutes pause, may be continued for from thirty minutes to an hour.

Without going into detail concerning the use of these rather complicated apparatus, the question arises as to what results may be obtained by the practicing physician, what cases is he justified in treating, or must the method be relegated to hospital practice, where constant and careful watch can be kept on the patients?

For minor affections, such as furuncles, abscesses, and so forth, the suction cup composed of a bell glass and rubber bulb, an ordinary breast pump, or a test tube with the bottom broken out and a rubber ball fitted over the broken end for suction, may be used. In considerable experience with these minor affections I have found that great relief from pain is not only experienced but the disease is shortened, and the small incision to release pus as recommended by Bier has always been sufficient.

The intermittent treatment continued for thirty minutes to an hour daily, during the early stages of an infection, is usually sufficient. Abscesses and furuncles may be opened before fluctuation by small incisions. When the cup is first applied very dark blood is drawn out, then lighter blood, while later nothing but serum will be seen. On the following day the slough will be seen to be loosened, and it will usually be possible to withdraw it with a suction cup or to remove it with tissue forceps. The cavity then will be seen to be lined with healthy granulations. It should be syringed with hydrogen peroxide and bichloride and dressed with sterile gauze without drainage. If this treatment is followed out, pain will rarely be experienced after the first application. Healing will be rapid and disfigurement will be slight.

In cases of inveterate furunculosis which under older methods required from one to two weeks before healing was complete, passive hyperemia has often cured in from four to five days, and the patients themselves have recognized the benefits obtained by the method.

Equally gratifying have been the results obtained in cases of puerperal mastitis, the passive hyperemia being applied by means of a large suction jar attached to a vacuum pump. Again, the intermittent use of the congestion seems preferable, the breast being drawn into the jar with just sufficient force to cause a feeling of fulness. This method has been very satisfactory in these ordinarily most trying cases.

It is not necessary to make very large incisions to evacuate the pus, an important cosmetic point in this region. Not only are the large disfiguring scars avoided, but the period of treatment is remarkably lessened, healing being effected in one case in ten days from the time of onset. It would appear that the suction alone in emptying the loose mammary tissue of pus product plays an important part in cases of this character and would help to avoid the dangers of burrowing which so commonly happens in breast abscesses. An important point in treating breast abscesses by this method is to puncture each focus where pus is suspected; the punctures need not be large, but they should give each abscess cavity, should they be multiple, access to the suction cup.

To recapitulate, the general rules governing the application of the Bier method are that the pressure should never cause pain, in fact it should alleviate it; swelling, cyanosis, and edema should be produced even up to the constricting point, the arterial pulsation not being interfered with; pus if present is evacuated, the bandage being applied as described; in severe cases continuous pressure is maintained for twenty hours, in others a daily compression of ten hours is indicated, the time gradually being reduced as the inflammatory condition subsides.

While these rules hold good for acute conditions, they are not applicable to tuberculous affections, in which hyperemia should be induced for a short time without producing edema. In tuberculous affections of the extremities and in tuberculous arthritis the constricting band is applied exactly as in the case of acute infections. It is allowed to remain from one to three hours, possibly two hours being the limit for its use by those who are not experienced in hyperemia. The constriction is sufficiently firm to produce hyperemia, but in no sense should an edema be produced. The adaptation of this method has obtained in Bier's experience most favorable results, his unfavorable cases being encountered more particularly in the early years of his practice when constriction was employed over long periods of time. This method applied daily is well adapted for dispensary practice, and in some cases intelligent patients have been able to apply the constriction themselves, although this is a privilege which should be used only with precaution.

My own experience in tuberculous infections has been limited to one intractable case of tuberculous synovitis, in which a return to the normal condition was accomplished; one case of persistent sinus of the hip following an operation for coxalgia, which closed after six weeks of daily interval cupping continued one hour at each

sitting; and several cases of cervical sinus following tuberculous adenitis which closed rapidly under the intermittent suction treatment. The gray, sluggish granulations have become red and healthy, and within a month or six weeks of daily treatment have healed firmly, though with all other methods of treatment they persistently refused to heal.

This paper is intended to call attention to the application of artificially induced hyperemia in general practice. Its use in severe affections, such as an extensive phlegmonous infection, an acute osteomyelitis or arthritis, should, as Bier advises, be permitted only after extensive experience. This can be gained alone through practice in the minor affections, in cases of chronic disease, and a most careful attention to technique. The treatment can, however, and should be used in the cases I have mentioned with perfect safety by the general practitioner.

Through observations made during a year's experience with this treatment, I believe it to be a very important adjunct to surgery which should not be neglected, because it requires time, trouble, and special apparatus, for it is the duty of the surgeon to earnestly strive to produce the best results in every case whether it be minor or major work.

For producing hyperemia by suction, as in abscesses and furuncles, I have the ordinary Davidson cup consisting of a glass bell with rubber bulb attached. Of these I have several sizes; they are kept in a tray containing a 1:2000 bichloride solution. When treating lesions of this character a cup whose margins will reach just beyond the indurated area is selected and is applied with sufficient force to draw the enclosed area about ¼ inch into the glass bell. It is a good plan to start with light suction and gradually increase it as the part becomes anesthetic. Should the cup slip the edge should be covered with unguent. petrolat. or olive oil. When these lesions are seen early, there simply being slight tenderness and induration, they may frequently be aborted by cupping for thirty minutes at intervals, with five minutes suction and three minutes rest.

Should the lesion appear very hard, glossy, and the induration be quite marked, indicating that some breaking down of tissue has taken place, a quarter-inch incision should be made under ethyl chloride anesthesia, after which the cup is applied as before. In such cases the slough or core will usually be loose on the second day, and it may be drawn out by the cup or may be withdrawn with toothed forceps, leaving a cavity lined with healthy granulation tissue.

When fluctuation is present the treatment is the same. The pus is withdrawn by suction, not forced out by pressure.

At first pus and blood will be withdrawn, then dark blood, then bright-red blood, then blood-stained lymph, and finally pure lymph. When nothing but lymph is withdrawn the suction may be discontinued, the cavity syringed with peroxide and bichloride and a sterile gauze dressing applied without drainage. The treatment is repeated daily and may require from four to seven days, depending upon the severity of the lesion and the resistance of the patient. A slight cyanosis may persist for several weeks after healing, but this will disappear and the scar will not be noticeable.

The edema which follows cupping will be found to act almost like an infiltration anesthesia, and the lesion may often be probed or even incised with little or no pain. Ordinarily no pain is experienced after the first treatment.

In fractures where reduction is easily maintained, passive motions and massage started on the second day are found very beneficial, and this treatment may be aided by baking, after the acute congestion has subsided. When this method is carried out splints may be discarded early. For instance, a Colles fracture may be carried in a sling, splintless, after the fourth week, and after the fifth week the arm may be used.

Bier has lately reported some favorable results with passive congestion in cases of tuberculous testicle, but I have not yet had any experience with this treatment in these

cases. Here hyperemia should be produced, but edema should be avoided.

I have treated cases of acute synovitis of the knee-joint so painful that the foot could not be touched to the ground, and have had the patients stand up and limp out of the office unassisted, after thirty minutes hyperemia with a Martin bandage.

The treatment seems rational, as it is simply assisting nature to effect resolution and repair by increasing the means which she normally employs to accomplish this end.

In summing up the advantages of the Bier treatment I would say they are as follows:

Rapid relief of pain.

Small incisions.

Slight disfigurement in exposed parts.

Shortening of convalescence.

Less chance of metastasis from early opening.

The disadvantages are:

The length of time required in treatment.

Special apparatus.

Experience in severe cases.

A FATAL PRESCRIPTION OF ARSENIC AND STRYCHNINE.

The adage "History repeats itself" is abundantly illustrated in medicine. Cases, however extraordinary, can be paralleled if records be searched with sufficient diligence, and the minuteness with which details, often apparently insignificant, are reproduced is as curious as it is instructive. In diagnosis and treatment, too, errors which are remarkable because they are the result of peculiar circumstances which baffle even high skill are repeated again and again. Sometimes mistakes result from ignoring ordinary teaching, and are attended with disastrous results which do not prevent their repetition. Some eight years ago in an annotation the *Lancet* drew attention to the fatal consequences of prescribing together liquor strychninæ and liquor arsenicalis. Such a combination ought not to be dispensed, although the "Art of Dispensing" states that they are "sometimes prescribed together. The alkali of the latter precipitates the strychnine, so that a shake-the-bottle label must be used." As the *Lancet* insisted, the risk is too great to countenance the dispensing of such a mixture. If it is desired to prescribe arsenic and strychnine together the use of liquor arsenici hydrochloricus would obviate all risks of precipitation. But the risk would remain of the dispenser substituting for this preparation liquor arsenicalis, either by mistake or intentionally if he had none of the acid solution. These remarks are made in connection with the following case:

A practitioner wrote a prescription containing "Liq. As." one ounce and "Liq. Strych." five drachms; water to six ounces. The dose was half a teaspoonful. It seems that prescriptions had frequently been made up for him in these terms without ill effects. However, in the end a patient who took the mixture was seized with fatal convulsions. The result was attributed to the dispenser having used the alkaline liquor arsenicalis instead of the acid liquor arsenici hydrochloricus, so that a sediment of strychnine formed.

In the *Edinburgh Medical Journal* for August Prof. H. Harvey Littlejohn and Mr. T. W. Drinkwater have reported another case of the same fatal mistake. A mixture containing equal parts of liquor arsenicalis and liquor strychninæ was prescribed for a woman, aged thirty-six years, who was suffering from pulmonary tuberculosis. Six drops were ordered to be taken three times a day in water. A druggist dispensed the prescription in an ounce bottle, which was taken without ill result. Then a second bottle was taken except a few drops containing a little sediment. At 10 A.M. one day the patient, finding the bottle almost empty, added to it some water, shook it up, and drank it. An hour later she complained of feeling ill and of not being able to walk. She lay down and had a convulsion. Her medical attendant was sent for and found her lying in bed with an anxious expression. She told him what she had taken and said she was afraid that "she had done for herself." The slightest touch caused a convulsive seizure. She died at 12.20 P.M.—*Lancet*, Oct. 26, 1907.

EDITORIAL.

THE DROP METHOD OF ADMINISTERING ETHER.

For many years we have been surprised that our English cousins should resort to the use of cumbersome and often complicated apparatus for the administration of those drugs which are employed to produce anesthesia by inhalation. We believe that it is always wise to use the simplest apparatus possible in the performance of any mechanical or other act requiring extraneous aid, and this rule certainly applies in regard to the administration of these pain-relieving agents. The ordinary folded napkin, or towel, or the exceedingly simple inhaler of Esmarch, is without doubt the best thing which can be used for the administration of chloroform. Recognizing the fact that far too much ether was administered to the vast majority of patients, Dr. Allis, of Philadelphia, many years ago invented what is known as "Allis's inhaler," which has been used very largely in this country because it provides the patient with a large amount of atmospheric air at the same time that it permits the anesthetist to administer adequate quantities of ether vapor, with the result that the old ether cone, made out of a towel and supported with felt or pasteboard in such a way as to make it impervious to air, has almost entirely disappeared from use; to such an extent that the modern trained nurse does not know how to make the ether cone which her predecessor so dexterously prepared twenty years ago.

More recently the so-called drop method of administering ether has come into vogue as surgeons and others have recognized, more and more clearly, the fact that most of the evil sequences to ether anesthesia are due to the fact that the patient has received an excessive quantity of ether vapor. Whenever this so-called drop method has been used, a remarkable diminution in evidences of pulmonary and renal irritation and gastric disorder has taken place, so that with the best operators the drop method of using ether is now universally employed, with the result that the patient is no longer saturated with the drug and no longer exhales ether in his breath for several days after the operation is over. It is quite true that this method requires the employment of a greater quantity of ether than the older closed method, because the ether, being dropped upon a folded towel, as is chloroform, a considerable quantity escapes into the surrounding air. On the other hand, when it is remembered that ether vapor is heavier than the atmosphere it is also recalled that if the napkin, upon which the ether is dropped, is held immediately above the face of the reclining patient, the vapor of the ether passes to the nose and mouth in an invisible cloud in quite as great a concentration as is necessary, and, unless the ether is poured on the napkin very lavishly, but a comparatively small quantity is lost. Indeed, it is probable that with the old method, in which the ether was soused upon the cone, a greater quantity was used than by the more modern plan.

We note with pleasure that our English cousins are waking up to the importance of this method of using this valuable anesthetic which for so many years has been almost exclusively employed by American surgeons, at least those who live north of Mason and Dixon's line. Thus, Brownlee contributes a paper to the *British Medical Journal* of December 28, 1907, in which he points out the advantages of this method and quotes the statistics of Miss Alice Magaw, who has reported 14,000 cases of anesthesia by the drop method without a death directly due to the anesthetic. Brownlee, we think unfortunately, resorts to Schimmelbusch's mask, but the point of his paper is that he emphasizes the value of the drop method. He asserts that in strong or alcoholic men he has found some difficulty in inducing anesthesia by this plan, and so it

is his habit to begin with one part of chloroform and three parts of ether, and later to develop full surgical anesthesia with ether alone dropped, instead of poured, on the inhaler.

He reports a series of cases in which the patients varied from two years to seventy-three years of age. They belonged to all classes, including alcoholic men, neurotic women, and patients emaciated by malignant disease. The shortest administration lasted seven minutes, the longest three hours, and his experience has led him to greatly prefer this method to the cumbersome apparatus commonly employed in English hospitals. There is a great diminution in the manifestations of shock, the color remains good, post-anesthetic sickness is greatly lessened, and cyanosis is almost unknown, although this symptom is very common with closed inhalers. Another advantage is the fact that as a new napkin is employed each time no mechanical inhaler has to be disinfected.

In some remarks made by Mr. Thomas concerning this method, which he appends to Brownlee's paper, he asserts that he has found less capillary hemorrhage during operations, less sickness after operations, no bother with the anesthetic bag commonly employed in England, easier sterilization of the mask, if it is used, and far less anxiety to the surgeon if the anesthetist has not had large experience. Thomas reports one case in which the operation lasted two and a half hours. He removed three-quarters of the stomach, a large portion of the duodenum, the whole of the transverse colon with its mesentery and glands, occluded the ends of the duodenum and of the ascending and descending colon, and finally performed a gastrojejunostomy under difficulties, because the stump of the stomach could not be brought to the surface. He also performed an ileosigmoidostomy. Notwithstanding this fact he asserts that the patient had little shock, recovered, and was quite cheerful within six hours. Surely this is a victory for modern surgery and for modern anesthesia, not to speak of the victory for the operator himself.

THE NECESSITY OF REST AFTER AN ACUTE ILLNESS.

With the advances of bacteriology in its relation to the practice of medicine we learn more and more that many of the conditions of acute illness which we have been accustomed to consider as distinctly local in character are really dependent upon a general systemic infection, in which state all organs of the body suffer to some extent, although certain organs may bear the brunt of the disease, or at least present more sharply-defined symptoms than are found in other parts of the body. This important recognition of the fact that nearly all infection is a general condition, rather than a local one, emphasizes the necessity of the physician carefully investigating the state of each important organ of the body when prescribing for and giving advice to patients who are taken ill, or who are recovering from an acute illness. It no longer suffices to observe alone a diminution in the chief manifestations of a disease before giving a patient a clean bill of health. Such carelessness leads not rarely to prolonged ill health or even permanent invalidism. Thus the number of instances in which patients recover from an acute rheumatism only to become cardiac invalids is by no means small. Even in the case of such a disease as acute articular rheumatism, which is known to exercise a very deleterious influence upon the endocardium, physicians are prone to allow their patients to get up as soon as the joint manifestations are considerably modified. Such a mistaken method may not produce immediate evil effects because the heart muscle may be strong enough to compensate for the damage done to the valves, but ultimately the patient comes under medical observation a second time because he has symptoms of cardiac disability, and then it is recognized that the attack of acute articular rheumatism which occurred some years before is really the direct cause of the grave ill health which is present. It is our own custom to insist that patients who are suffering from acute articular rheumatism should remain at absolute rest for a period of not less than

three weeks after the joint symptoms are in abeyance, and this practice has been forced upon us, not only by personal experience which indicates that getting up at an earlier date is prone to result in disaster, but because every clinician continually sees instances of cardiac disease which have undoubtedly had their origin in a rheumatic endocarditis months before.

The necessity of carefully studying the condition of the heart is not limited, however, to that acute infectious disease known as articular rheumatism; it should be extended to every acute infectious disease, whether it be a prolonged illness, as is usually the case in typhoid infection, or whether it be in pneumonia or influenza. While it is true that in acute articular rheumatism the effects are chiefly exercised upon the endocardium, particularly that of the valves, in typhoid fever, pneumonia, and influenza the venom seems to be chiefly concerned with producing muscular degeneration or great feebleness, and so it not infrequently happens that the patient who gets up too early and thereby strains an enfeebled heart muscle suffers for months and years from cardiac feebleness with or without a certain amount of dilatation, and oftentimes dates his physical incapacity to the attack of influenza or typhoid fever which occurred a long time before. Pathologists have recognized these cardiac changes much more fully than have clinicians, and have repeatedly urged upon their active colleagues the necessity of considering secondary cardiovascular degeneration. Of course, the necessity of rest after one of the acute infections is far greater in the patient who already has some valvular lesion or tendency to cardiac feebleness than it is in the patient who starts out with a fairly strong cardiac mechanism.

In other words, this is an instance in which the physician is not concerned so much with the administration of drugs for the purpose of preventing or curing disease, but is relied upon by his patient for advice which will be effective in preventing subsequent ill health, and this advice the patient has a right to expect and to demand.

IS THE ABSORPTION OF BACTERIA FROM THE PERITONEAL CAVITY BY THE LYMPHATICS OR THE BLOOD-VESSELS?

A very considerable number of researches have been carried out within the last few years upon the rapidity with which bacteria are removed from the peritoneal cavity. Many of these seem to indicate that a large part of the absorption is carried on by the lymphatics, but Asher, Starling, and Mendel have proved that many soluble substances introduced into the peritoneal cavity are taken up by the blood-vessels. Wells and Johnstone have recently in the *Journal of Infectious Diseases* of November 15, 1907, raised the question as to whether it is true that bacteria leave the peritoneal cavity chiefly or solely by way of the lymphatics. Researches carried out by Clark some time since certainly seemed to indicate that this was the case, and many practitioners at the present time place their patients, after operations upon the organs of the abdominal cavity, in such a position as to favor lymphatic drainage. Wells and Johnstone point out that Buxton found that if large numbers of typhoid bacilli are injected into the peritoneal cavity of rabbits, these microorganisms appear in the blood very quickly, the largest number being found from five to fifteen minutes after the inoculation, although at the end of thirty minutes they decreased rapidly, so that at the end of an hour few bacilli could be found in the blood, presumably because of the bacteriolytic influence of the serum. Buxton thought that this absorption took place through the lymphatics, and Wells and Johnstone seem to have proved pretty conclusively that when large numbers of bacilli are injected into the peritoneal cavity of rabbits they pass into the blood chiefly by way of the thoracic duct, although it is possible that some bacilli enter the blood by a more direct route. These investigators also believe that the absorption of soluble substances from the peritoneal cavity takes place by the blood-vessels chiefly, although they are also absorbed somewhat by the lymphatics. The

point is, however, that so far as bacterial absorption is concerned the lymphatics play the chief rôle.

THE CLINICAL SIGNIFICANCE OF McBURNEY'S POINT.

As quoted by Sturmdorf in an article on appendicitis, published in the *New York Medical Journal* of December 21, 1889, McBurney wrote as follows: "...found in all my operations that it lay either thickened, shortened, or adherent very close to its attachment to the cecum.

"This, of course, must in the early stages of the disease determine the seat of greatest pain on pressure, and I believe that in *every case* the seat of greatest pain, determined by the *pressure of one finger,* has been *exactly* between an inch and a half and two inches from the anterior superior spinous process of the ilium on a straight line drawn from that process to the umbilicus.

"This may appear to be an affectation of accuracy, but as far as my experience goes, the observation is correct."

Sturmdorf concedes that McBurney's point marks an epoch and a phase in the evolution of our mastery over appendicitis; nevertheless, while it served to blaze the path through the mazes of earlier controversies, it has proved an equally potent factor in leading to error and fruitless mutilation, and though vested with almost pathognomonic dignity for almost two decades, it must be relegated to the humble rank of a possible contributory factor. He holds that appendicitis may exist in the absence of the McBurney point, and most important, that a typical McBurney point may be present in the absence of an appendiceal involvement. A frank appendicitis tends to substantiate McBurney's findings. There is, however, a group of appendiceal lesions, one rapidly fatal, the other with symptoms referred to the upper digestive tract, in which a McBurney point cannot be demonstrated at any stage of progress. There is a further heterogeneous group presenting a typical McBurney point with perfectly healthy appendix.

After a very brief résumé of the work of Ross, MacKenzie, and Head, Sturmdorf states that these observers have established the fact that any given point of pain may be either a direct expression of a contiguous disturbance, or the transmitted manifestation of a distant lesion; or that an existing McBurney's point may represent the direct pain focus of a disturbance within its own area or the reflected pain focus of a distant lesion.

Head demonstrates his pain points by a gentle tactile exploration of the cutaneous surface carried out with a round pinhead employed in the manner customary in testing for analgesia, thus eliciting only superficial hyperalgesia. The McBurney method, however, elicits pain points both superficially and deeply placed, depending upon the degree of pressure exerted. The transmitted pain focus as elicited by Head's method is characterized by increased superficial reflexes, the deep apparently not being disturbed, and the simultaneous existence of concomitant pain points, radiating backward and upward toward the spine, most marked over the bony prominences encountered in tracing the course of the involved nerve trunks to their exit from the cord. The deep pain focus is, however, not necessarily attended by any hypersensitiveness of the skin, whilst the deep muscle reflexes are exaggerated, appearing often in the form of tonic contraction, and the concomitant pains if present radiate downward along the anterior crural nerves and the peritoneum, never upward and backward.

In the group of cases of acute inflammatory appendicitis unattended by perforation or gangrene, there will be no superficial area of hyperesthesia, but the typical McBurney deep pain point and the associated signs of a deep-seated inflammatory process are all present, and in addition Blumberg's sign, which Sturmdorf formulates as follows: When the appendicular inflammation is unaccompanied by peritonitis, the deep pain focus in McBurney's area alone is manifest. In beginning peritonitis, the recoil of the abdominal wall following the sudden withdrawal of the examining finger will prove more painful than the original digital pressure.

Sturmdorf's dictum that the rapidly fatal types of appendicular lesion presenting themselves clinically as unfocalizable forms of general sepsis, and also those cases which present but mild disturbances of the upper digestive tract, described by Ewald as "appendicitis larvata, or masked appendicitis," do not during any stage of their progress present any distinct focus of pain in McBurney's area will certainly not meet with general acceptance. Indeed, these cases so habitually present this one localizing symptom in the absence of nearly all other characteristics of appendicits that it has been very justly relied upon when it is elicited after repeated examination as an indication for operation.

Sturmdorf classes in his third group acute and chronic disturbances of every degree, and many kinds linked by an existing McBurney's point over a normal appendix, and further states that "it is in this group that operative artefacts, resulting from clamp and ligature applied to an unoffending appendix, supply a pathological consolation for misdirected surgical effort, while the true source of the disturbance lurks somewhere between the thorax and perineum, anywhere but in the appendix." With this grimly humorous statement he will fail to find a general concurrence, though there lies within it a germ of truth. A typical and localized tenderness at the McBurney point on deep pressure elicited as a result of repeated examination is extremely rare in the absence of inflammatory lesion in this region. The futile operations performed because of the presence of localized tenderness in the right iliac fossa are usually to be attributed not to the true presence of a McBurney sign, but to unskilful, often rough examination, or the interpretation of the patient's psychological rather than physical condition. The general surgical conception of the McBurney point of tenderness is that it is elicited by deep and sharply localized pressure. The clinical significance of the importance of the superficial pain points has been accepted by comparatively few, though Sturmdorf's statement to the effect that the more superficial the pain focus the more certainty of its indicating a distant lesion and a normal appendix seems to be well founded. That Sturmdorf's statements are worthy of careful consideration is suggested by the fact that his conclusions are based upon 208 cases observed in public and private service during a period of three years.

That this contribution will relegate the McBurney point to the humble rank of a possible contributory factor is to be doubted. It has never been regarded as in itself pathognomonic.

BACTERIAL INFECTIONS OF THE GENITO-URINARY TRACT IN CHILDHOOD.

It is commonly accepted as a fact that the kidneys can excrete organisms brought to them by the blood without in themselves suffering any harm. Indeed, some observers are inclined to regard the kidney as the main excreting agent of living germs. Sherrington has, however, been unable to verify experimentally this conception, since as the result of microörganism injections the excretion either did not occur or began some time after the injection and progressed slowly. It is inferred that the organisms escape only after some damage has been inflicted upon the renal secreting tissues. Even in the absence of albumen or blood he believes it unsafe to assume that the kidney has suffered no damage.

Box (*Lancet*, Jan. 11, 1908) in commenting upon this topic notes that the body can dispose of enormous numbers of bacilli without their appearing in the urine or other secretions. When they do appear the time of their appearance and the substances which appear with them lead to the presumption of renal damage. The quantities which appear in the urine are not in any way comparable to the quantities injected.

As to the clinical application of these facts, he notes that in cases of bacilluria the organisms appear in the urine, even when freshly voided, in enormous numbers, though it is quite the exception to obtain any definite evidence of renal damage in the form of casts or blood. Moreover, the bacilluria of typhoid fever, of scarlet fever, of measles, and of diphtheria has in many

cases been proved to be a colon bacilluria. From this he concludes that the common cause of bacilluria is due to an ascending infection, a suspicion which is corroborated by the sex incidence of the disease, for many more cases occur in females than in males. Moreover, the chronological order in which bladder and kidney suffer admits the same explanation.

Lenhartz as the result of his investigation of the incidence of pyelitis in the adult, found that 66 out of 80 cases were due to invasion by the bacillus coli communis, and that males were rarely infected. Much importance is attributed to the effect of pregnancy, parturition, and menstruation in preparing the soil. The colon bacillus, though it grows best in an alkaline medium, will also flourish in one which is either neutral or acid. It is often found in pure culture, nor does it decompose urea, hence is unattended by as deep and pronounced an inflammation as results from the presence of the bacteria which possess this power. Finally, because of its motility Box believes that even without urinary stagnation it may make its way from the urethra or bladder into the pelvis of the kidney.

As to the clinical manifestations in childhood, infection of the urinary passages may appear as pyelitis, cystitis, or incontinence of urine, without obtrusive evidence of local inflammation.

The possibility of pyelitis should always be suggested by the presence of fever, whether this be sudden, remittent, or relapsing in character, especially if this be associated with rigors and marked fluctuations of temperature. These feverish attacks may be so slight as to almost escape attention, or so severe as to stimulate the profound toxemia characteristic of typhoid or pneumonia. The kidney is often, but not always, tender. Pain, if present, is subcostal; the urine, at first scanty, becomes profuse. It may contain very little pus, but be persistently turbid from bacilli; it may show pus, blood, and casts. The infection often exhibits a remittent type without being associated with distinct enlargement. The diagnosis is based on the urinary finding.

Cystitis arises quite suddenly and often without obvious cause. Frequency of urination is perhaps the commonest symptom and may be the only one. When the inflammation is more acute this frequency is attended by pain, by obvious pus, and even blood, and the urine is always turbid or opalescent. Nocturnal incontinence and tenderness over the bladder are noted at times. Distinction from pyelitis and cystitis must be based mainly on the presence in the latter case of painful micturition and tenderness over the pubis.

As to the symptom incontinence, bacilluria is the underlying condition of some of the most inveterate forms. The urine is usually faintly acid, leaves a trace of albumin, and on centrifugation shows a sediment made up of a few pus cells and bacilli. At times oxalate crystals are noted. In these cases nucleoproteid is found in the urine, which is supposed to be a sign of irritation of the urinary tract.

As to the prognosis of the cystitis of childhood, this must be guarded. The markedly acute cases very often clear up promptly. Those characterized by trifling local symptoms, exhibiting remissions and exacerbations, are likely to be extremely obstinate to treatment.

As to treatment, if the theory of ascending infection be correct the necessity for frequent bathing and absolute cleanliness of the urinary meatus is obvious. Moreover, prompt treatment of vulvitis is imperative. Box suggests that the milder cases of cystitis, pyelitis, and incontinence of urine should be treated by full doses of citrate of potassium combined with sedatives of the belladonna group. In severe cases of incontinence of urine, even though colon bacilluria is associated, the first care should be to determine the presence or absence of threadworms, the stools and urine both being examined for this purpose. Belladonna is most disappointing in inveterate cases, as are also urotropin, helmitol, hetraline, benzoate of ammonium, salicylate of sodium, and boric acid. The latter in particular is to be avoided since it absolutely destroys the appetite and produces nausea. With a view of testing the theory that the bacillary infection is hematogenous and perhaps due

to coprostasis, cases were treated for prolonged periods with calomel. No improvement could be ascertained. Salol was also inefficient. In one case the effect of anti-colon bacillus serum was most satisfactory. This patient was one with inveterate colon bacilluria and incontinence, which had resisted all treatment for twelve months. Three injections of 25 cubic centimeters stopped the incontinence, though the bacilluria persisted in some degree. The patient relapsed to the degree of one incontinence a week after discharge, but remains at the time of reporting much better than before treatment. Another patient treated by serum, both by subcutaneous injection and by the rectum, showed no improvement. A series of vaccinations also failed to give good results.

This contribution, even though it were to accomplish no other purpose, would serve a most useful end if it were to convince those who had little experience with urinary infections of the futility of persistence in a prolonged course of urinary antiseptics in the hope of curing a bacilluria and the inflammation of the urinary tract incident thereto. It is probably true that a certain proportion of these cases are greatly benefited by a judicious choice of such antiseptics given in moderate doses, and cure following such a course of treatment is sometimes surprisingly prompt, though the *post* and *procter* are too often confused. Where, however, the effect of such treatment is not promptly beneficial the continuance of it is likely to be deleterious, since by producing kidney congestion the drugs favor the development of nephritis. It is probable that the best that can be done in inveterate cases of bacilluria is incident to observance of the rules of general hygiene, strict local cleanliness, and the free use of diluents, supplemented by most careful attention to the condition of the bowels, together with the moderate use of intestinal antiseptics and an occasional brief course of urinary antiseptics.

This contribution of Box's is also of importance since it calls attention to a cause of either continued or intermittent fever in children too often overlooked.

REPORTS ON THERAPEUTIC PROGRESS.

A REPUTED CURE FOR THE OPIUM HABIT.

The *British Medical Journal* of October 19, 1907, states editorially that in view of the fact that in the past various "cures" which have been put forward for dipsomania and other drug habits have proved on investigation to be devoid of the properties ascribed to them, and have survived chiefly in the form of fraudulent quack medicines, the attitude of the profession toward any new substance put forward as a cure for a drug habit must necessarily be one of reserve, and even skepticism. Nevertheless, the magnitude of the boon which would be conferred by a drug that would really benefit the victims of morphine, alcohol, etc., and the wide extent to which the habits prevail, are sufficient to insure attention to any new substance for which the claim is made; and if its credentials appear satisfactory after a preliminary investigation a full and fair trial is certain to be accorded to it. During recent months sundry reports have reached us about the marvelous efficacy of a new antiopium drug which is being used in the Malay Peninsula; and as the drug appears to have now obtained a footing here also, it may be of service to summarize the chief facts which are known concerning it.

The plant yielding the drug in question is *Combretum sundaicum*, a woody climbing plant abundant in the plains and jungle around the town of Kwala Lampur, in Selangor. More than one version has been given of the accidental discovery of the virtues of the drug: according to the account given to Mr. L. Wray, Director of Museums, Federated Malay States, a party of

Chinese woodcutters, working in the jungle, ran out of tea, and tried the leaves of this plant as a substitute; an infusion of the raw leaves produced bowel complaint, but if the leaves were first roasted a fair substitute for tea was obtained which had no ill effects. Opium drugs, or the refuse opium after being smoked, was then added to the beverage, and the men continued drinking this in place of tea for a weak or more. After that time it was found that all desire for opium smoking had been lost. On the other hand, Mr. J. G. Alexander, the honorary secretary of the Society for Suppression of the Opium Trade, was told in Kwala Lampur that the plant was brought home by mistake by a collector of medicinal plants, who prepared an infusion of the leaves and tried it on himself and a friend; the latter, an opium-smoker, found that the beverage took away his desire for opium. Nothing is said in this version about previous roasting of the leaves, or of the addition of opium dross to the infusion.

Whichever version may be correct, further trials of the drug were made, and the results led to the formation of the Selangor Anti-Opium Society, which began work on November 3, 1906, preparing the medicine and distributing it gratis to those who applied for it. The number of applicants was 6130 in the first three weeks. Branches were started in other towns, and the work was also taken up by members of the Methodist Episcopal Mission, which supplied the medicine to many thousands of people. It appears from Mr. Wray's paper that from November 16 to 23 about 396 patients had reported that they were completely cured of the habit; no records were kept before the first date mentioned. Mr. Alexander, writing about the work of the Methodist Mission, said last year: "I have not heard of any relapses as yet, although the cure has been going on for more than a month, the numbers who come having rapidly increased within the past fortnight." Mr. Wray also points to the interesting fact that the official opium return for the State of Selangor shows the consumption during November to have fallen below the average for the previous five months by no less than 38 chests, or 25.5 per cent, without any variation in industrial conditions to account for it. In December, however, the consumption was 16 chests above that for November, which he thinks was probably due to the return of a certain number of the patients to their opium pipes.

The method of preparation and administration which appears to be invariably adopted is as follows: The branches and leaves are the parts of the plant used. The latter are separated from the woody portions, which are cut into thin slices and short lengths. Leaves and stem are roasted separately on an iron plate over a charcoal fire and then mixed together, the reason for separating being that the leaves would be charred by the amount of heating necessary for the wood. A decoction is then prepared by boiling from 8 to 11 ounces of the roasted drug in 4 gallons of water for three hours in a loosely-covered vessel and straining, at first roughly and then through a white cloth. Each patient is supplied with two bottles of the decoction, usually holding about 25 ounces each; into one he puts a quantity of burnt opium equal to the amount of his usual daily allowance, and none into the other. A dose of about 1½ ounces is taken from the first bottle as many times a day as the patient has been in the habit of smoking, usually three or four times. Each time a dose is taken the bottle is filled up from the second until the latter is emptied, when the patient continues taking the mixture that remains, without further alteration of its composition. Thus the patient begins with a dose of opium of only about one-sixteenth, or a daily dose of from one-sixth to one-fourth of his usual daily amount, and instead of smoking it he takes an aqueous extract of the residue left after roasting it in the same way as for smoking; with each dose he takes a quantity of the decoction of combretum, and the amount of opium progressively diminishes to the seventeenth dose, when it is approximately only one-third of that in the first dose; it then remains con-

stant to the last, or thirty-second dose. It is stated that in the majority of cases the cure is then effected; if it is not complete, the patient obtains a second supply of the medicine, into which is put only half the amount of burnt opium that was added to the first. As, however, the dose has been already reduced to one-third, it appears an irrational proceeding to increase it again to a half prior to a further reduction. In some cases a third bottle is necessary. When once the point is reached at which the patient can do without opium, further use of the combretum is not considered to be necessary; the "cure" is thus not a mere substitution of one drug habit for another.

Assuming that many, if not all, of the reported cures achieved by the treatment just described are genuine, it is important to ascertain which of the contributory factors are essential. Mr. Wray observes that whether the active ingredient is the antiopium plant or the burnt opium administered internally in gradually decreasing doses is a subject worthy of investigation. The latter is possibly the true cause, and the antiopium plant may only act as an astringent, preventing the distressing intestinal troubles which usually supervene on a stoppage of a customary supply of opium. The amount and nature of the alkaloids present in burnt opium is also a promising field of inquiry. The charred state of the antiopium drug, which was in use up to quite recently, suggests that any alkaloidal principle which it might possess had been destroyed in the process of roasting, or rather charring, to which it had been subjected. The drug is now more lightly roasted than formerly. A preliminary examination of the drug made in the laboratory of the Pharmaceutical Society in London showed the presence of some substance of the tannin group, but not of an alkaloid; and in the annual report of the Department of Agriculture of the Federated Malay States the government chemist reports that a preliminary investigation had not shown the presence of any alkaloidal, glucosidal, or other bitter principle, the organic matter consisting principally of tannin.

We understand that chemical investigation of the constituents of combretum is being continued in England, and that pharmacological tests are also being carried out with preparations made from it. Until the results of these tests are published there will naturally be reluctance to depart from the methods of administration hitherto employed, but it is clear that these leave a good deal to be desired. The author has referred to the irregularities involved in the method of reducing the dose of opium. The reports from Malaya also state that the decoction is very subject to fermentative and other changes, so that it often becomes putrescent, and has to be thrown away before the end of a course. No doubt British pharmacists will be able to prepare a product free from such objections while attaining the virtues, whatever they may be, of the cruder preparation.

NOTES ON THE CAUSES AND TREATMENT OF COLLAPSE IN MALIGNANT AGUE.

In the *Journal of the Royal Army Medical Corps* for October, 1907, CATHCART writes on this topic. He points out that the proximal cause of this collapse is obvious in many cases—*i.e.*, the abstraction of a large quantity of the watery constituents of the blood by vomiting and diarrhea. The actual nature and origin of this copious blood-stained vomiting and diarrhea seem to be a trifle obscure—*i.e.*, whether the blood-staining of the ejecta is due entirely to an actual infarction of the terminal vessels of the stomach and intestinal wall by sporulating parasites. Large numbers of parasites have certainly been found in the villi of the stomach and intestines, according to Stephens and Christopher. On the other hand, it seems probable that, in some cases, the blood-staining element in the ejecta might be due to extensive submucous hemorrhages, occurring as local manifestations of profound toxemia, on a par with the occurrence of petechiæ on the body surface. A series of post-mortems, with stained sections of the stomach and intes-

tines, would clear this point, but up to the date of writing opportunity for these has not occurred.

As regards the actual immediate treatment of this condition, there remains very little new to be said. In the milder cases a medium dose of morphine (¼ grain hypodermically), with external warmth in the form of hot-water bottles and blankets, is indicated. This is combined with treatment of the predominating symptoms. In the dysenteric type a starch and opium enema should be given, with the buttocks well elevated. If vomiting is copious and persistent, ice pills are given, and all nourishment stopped by the mouth for twelve hours. In either variety a full dose of quinine (bihydrochlorate, grains x) is given intramuscularly, and repeated each morning for three successive days. Weekly injections are, as a rule, sufficient after this. In the more severe cases more active treatment is to be employed. In these cases the peripheral circulation (having almost failed) can no longer be trusted as a drug carrier, and on this account hypodermic injections of any kind are likely to prove useless. Venous transfusion of two to three pints of saline fluid is performed, and the quinine solution may either be added to the saline injection, or injected separately by Bacelli's method into the median basilic of the other arm; grs. xv of the bihydrochlorate (intravenous) is a suitable dose for such cases.

Under this treatment the pulse as a rule improves rapidly, but this improvement may be only temporary, and may then be followed in twenty minutes to half an hour by a state of collapse as complete as before. It is safer on this account, therefore, to supplement the venous transfusion by injecting the axilla with a quart of saline, this being more gradually absorbed by the reëstablished peripheral circulation. This process is too familiar to need more than a word of description. A special trocar and cannula has been devised for the sake of convenience, but an ordinary exploring needle with the transfusion tubing attached answers the purpose admirably. A fold in the anterior axillary wall is picked up, and the needle driven in to the extent of 1½ inches. The transfusion bell-jar can then be fixed to the wall above the patient's bed, and after the injection the needle or cannula may be left *in situ*, should the patient's condition render a second injection of probable necessity. This method has the double advantage of expedition and slow absorption, but is necessarily only of value when the peripheral circulation is sufficiently active to absorb the injection, and on this account can never altogether replace venous transfusion. It would appear that transfusion in these cases performs a dual service in combating the actual collapse and by diminishing the profound toxemia. A simple and rapid method of performing the operation is to attach a fine-caliber tube to a hypodermic needle, and then run the saline fluid directly into the vein without any preliminary dissection. The collapse of the vein wall may render this difficult, but with adequate constriction above the elbow the vein can generally be sufficiently dilated for the purpose.

THE OPSONIC INDEX AS A GUIDE TO REGULATE THE USE OF VACCINES IN THE TREATMENT OF DISEASE.

PARK and BIGGS, in the *Journal of Medical Research* for October, 1907, in a useful paper on this subject state that the number of cases treated with vaccines by the authors has been comparatively few. They began with the treatment of twelve cases of tuberculosis, of which half were tuberculosis of glands or joints and half were incipient lung cases. The opsonic index responded so irregularly to the injections that they were unable to derive help from it in treatment, and after four weeks they discontinued taking the index, but continued the vaccine treatment according to the system in use at Saranac Lake and elsewhere.

Nine staphylococcus infections were treated with vaccine, and apparently with benefit. In three of the nine, before inoculations were begun, the index was above the normal, in the others it was slightly or

considerably below normal. After injection the opsonic power of the blood always rose above the normal, but sometimes only for a few hours. When the index was taken every day it was so variable as to be of little help, and now they treat the cases without taking the index.

A number of cases of furunculosis came to their attention, during the time when the others were being treated, who refused to be injected. These all made good recoveries, but none of these cases were as severe as several of those receiving inoculation. Their belief is that the vaccines aided in the recoveries of those inoculated.

A number of mixed infections of the sinuses of the head were treated. In these cases great care was taken to thoroughly cleanse the cavities before taking the cultures. Although at first some of these cases seemed to be improved by giving vaccines prepared from their own cultures, yet in the end only one out of eight showed definite improvement, and the vaccine injections were replaced by operation and the usual treatment.

A number of cases of vaginitis in children, due to gonococci, were inoculated with the gonococcus vaccine. For every case so treated a control was cared for in the ordinary way, and there was no marked difference in the behavior of the two series of cases.

Two cases having chronic sinuses leading to diseased bone were treated by the vaccines without benefit. Both were infected with more than one organism. In one of these there were three different organisms; five of these, which were unidentified bacilli, had remarkable indices, one averaging about six and the other above three during several weeks in which the tests were made.

Three cases of acne were treated. Two of these were quite severe and were apparently markedly benefited. They had previously been resistant to the ordinary treatment.

The few cases which the writers have studied have impressed upon them the opinion that while the vaccines have a restricted field in therapeutics, it is greater than they believed possible before the reports of Wright were published.

Those which appeared to receive the greatest benefit were localized infections of the subcutaneous or deeper tissues. Inflammations of the mucous membranes and generalized infections were not benefited.

The opsonic index did not seem to the authors to be an adequate guide to regulate the use of vaccines. Their experience in the vaccine treatment is, however, so limited, when compared to that of Wright and his followers, that they feel they are hardly justified in making conclusions even as definite as the above.

LUMBAR ANESTHESIA.

Despite the considerable proportions already assumed by the literature of lumbar anesthesia, despite, too, the fact that some authors speak from an experience of more than a thousand cases, there is still great diversity of opinion as to the selection of suitable cases, as to the choice of a drug, and as to the manner in which the desired, as well as the unexpected, results are produced.

Even with regard to technique, while there is pretty general agreement as to the choice of midline for the puncture, and no very bitter quarrel as to which interlumbar space should be selected, it is by no means settled whether or not cerebrospinal fluid should be drawn off before injecting the drug, and whether the drug should be dissolved in the abstracted fluid or in some other medium. Since exactly contrary opinions are expressed with quite equal certainty, it may be assumed for the present that the point is immaterial.

Of the drugs that now hold the field—stovaine, novocain, alypin, and tropacocaine—the most recent publications indicate a growing preference for the last named as the most reliable and the least dangerous. It seems probable, however, that further experience will show, not that any one of them is immeasurably superior to all others, but that certain qualities of each may be

found of advantage for special details of requirements; thus, the necessity for complete relaxation of the muscles in setting or wiring a fracture might outweigh the disadvantage accruing from a greater liability to undesirable sequelæ in the use of a certain drug.

Most advocates for the spinal route in anesthesia agree that alcoholism, diabetes, severe cardiac and pulmonary lesions, and perhaps arteriosclerosis, constitute direct indications; severe scoliosis is admitted as a contraindication even by those who have adopted the method as a routine; early childhood and hysteria are accepted by most as unsuitable; beyond this narrow ring, however, wide divergences are found.

Mohrmann asserts in emphatic terms that suppurative processes are an absolute bar. He, like Sonnenburg, has had an unhappy experience in a case of osteomyelitis, where a fatal meningitis ensued in circumstances leaving no reason to doubt that the thecal affection was metastatic, and not conveyed mechanically by the puncturing needle. Dean, on the other hand, considers lumbar analgesia strongly indicated in all acute inflammatory processes within the peritoneum, because in his experience shock is diminished to a remarkable degree, and he has never had reason to regret its use. It is true that a case of appendix abscess is not strictly comparable with one of osteomyelitis, and therein lies the weakness of both positions; it is hardly justifiable to argue from a few cases of bone suppuration that lumbar anesthesia is negatived in all suppurative processes, but neither must it be lost sight of that by preferring spinal to inhalation narcosis, desirable as it may be to avoid shock, one may be exposing a patient with some forms of intra-abdominal suppuration to a risk which altogether outweighs that gain.

The undesirable "by-effects" and after-effects of lumbar injection are very numerous, but for the most part they are not more severe than those which may accompany the exhibition of chloroform, ether, or other drugs, such as the various antitoxic serums. Some are almost certainly due to errors of technique, and will be eliminated; others are strictly "accidental;" but there remain some to be reckoned with very seriously. One of the most serious is paralysis of the ocular muscles, chiefly of the external rectus, but also of the superior oblique, and occasionally of those supplied by the third nerve. Mohrmann makes much of the fact that ocular palsies have been observed after the use of both stovaine and novocain, drugs which, apart from their anesthetic properties, are widely different in all other respects; further, he points out that in many of the cases in which this phenomenon has occurred the analgesia has not been produced, or has only partially developed, or appeared very late. On these grounds he explains the paralysis as resulting from a too rapid diffusion of the drug permitted by the use of adrenal extract (or its synthetic equivalent) that has undergone chemical decomposition as the result either of mere keeping or of too prolonged or too frequent sterilization. A difficulty in accepting this explanation arises from the fact that similar paralyses have been observed after the use of these drugs without any admixture with a suprarenal derivative. Ach lays stress on the selection of those nerves which run a long course through the meningeal spaces and might therefore be supposed to offer a maximum surface to the action of the medicament. He recalls the case of postdiphtherial palsy to explain both the selection of particular nerves and the "postponement" of the symptoms. If the length of the nerve trunk exposed to the action of the drug had any great influence on the nature and degree of the loss of function induced, it might be expected that some relation would be noticeable between the depth of anesthesia of areas supplied by individual trunks of the cauda equina and the length of their intrathecal course. Beyond the observation by Mr. Barker that in a few instances the anesthesia has been patchy in distribution, there is nothing to suggest either inequality in depth or loss of sensation in areas corresponding to peripheral distribution of nerves, or, apart from the definition of the upper

limit of the analgesia, that the distribution is segmental. Various observers have noted in their experiments on animals that changes of a temporary character are to be found in the nerve cells of the cord and medullary ganglia as a consequence of the injection of stovaine. They are of the nature of swelling with vacuolation and displacement of the nucleus and some slight staining abnormalities. It has been suggested, too, that the ocular palsies may be due to nuclear hemorrhages, but the evidence is clinical rather than that of post-mortem observation. There is, on the other hand, experimental evidence to show that the drug undergoes some kind of chemical fixation in the substance of the nerve trunks.

If the elucidation of the ocular sequelæ is still to seek, the explanation of the severe headache, which is the most constant of the after-effects, is only furthered to the extent of discrediting the original idea of a mild or "aseptic" meningitis. Most authors are content to ascribe it to a capricious toxic effect; some prefer to attribute it to alterations in the cerebrospinal pressure, whether due to the direct abstraction of fluid, or to the injection of extra fluid, or indirectly to an increased outpouring determined by mechanical interference or by chemicophysical disturbance. It is not impossible that the cause is to be sought in a derangement of renal function, for Schwartz has found by careful investigation of the urine of patients with previously healthy kidneys, who had had injections of stovaine, evidence of nephritis in 78 per cent of the cases. The average duration of the nephritis was only six and a half days, and the maximum a month; in no case did there appear to be any permanent damage to the kidney. But if his observations be confirmed, they will go far to compel the inclusion of kidney mischief in the list of absolute contraindications.

The very important paper by Mr. Barker on the conditions influencing the range of effective action of a drug injected into the lumbar thecal sac, published in the *British Medical Journal* last March, has not, apparently, obtained the attention it deserved. His tests for isotonicity were perhaps open to some question, but his experimental observations upon the behavior of fluids of different densities, when injected into the cerebrospinal fluid, were not only ingeniously devised, but were also rich in the most suggestive results—results, moreover, which enabled him to present a record of the later series of his cases singularly free from blemishes.

It is a hopeful sign that most workers have experienced considerable improvement in the results of their later cases, and there is every reason to anticipate a speedy attainment of that accurate knowledge of the possibilities and the limitations of a method of inducing anesthesia that bids fair to find an established place in every-day usage.—*British Medical Journal,* Oct. 12, 1907.

PERNICIOUS ANEMIA AND ALLIED CONDITIONS.

As the result of a further careful study of this disease HUNTER reaches the following conclusions in the *British Medical Journal* of November, 1907:

The views of the writer as to the infective nature of this disease, and the part played by sepsis in connection with it, have suggested new lines of treatment with regard both to its prevention and possibly even to its permanent arrest.

The course of the disease is marked not only by slight variations from time to time, but usually by one or more periods of distinct improvement, lasting sometimes many months, in some cases even a year or two—sometimes occurring independently of treatment, but without doubt greatly due to the beneficial effect of arsenic.

The special feature of this anemia, however, is its great tendency to relapse, inexplicable on the view held by many that it can be produced by the ordinary causes of anemia, if only severe enough. For these relapses occur without sufficient cause to account for them, sometimes indeed after the slight causes alleged to have produced it in the first instance have been removed.

This tendency to relapse is, according to the present writer's observations, in reality due to the remarkable persistence of the specific hemolytic infection underlying the disease, since it is always accompanied by a recrudescence of the lesions in the tongue, stomach, or intestine, and by the glossitic, gastric, or intestinal symptoms connected therewith.

The great liability to relapse may, however, be due to the fact that—the important part played by oral, gastric, and intestinal sepsis not having been recognized—the patient has hitherto been left, not only with his specific hemolytic infection, but also with the local sepsis, which originally facilitated the contraction of this infection, and which favors its continued persistence. When he first drew attention to this matter in 1900, the writer expressed the hope that this had been the case. His subsequent experience satisfies him that it has been, and that the prognosis of this disease can be materially affected by a line of treatment he then recommended, based upon the above considerations. This line of treatment aims at:

1. The complete removal by local antiseptic measures in the case of the mouth, and by use of internal antiseptics in the case of the stomach and intestine, of the oral, gastric, and intestinal sepsis associated with the disease.

2. Special local antiseptic treatment of the infective glossitis present, supplemented by measures for raising the antitoxic power of the blood by a serum treatment, as he suggested in 1900.

THE TREATMENT OF BLACKWATER FEVER.

In an exhaustive article in the *British Medical Journal* of November 9, 1907, PROUT deals with the causes and treatment of this state. In connection with its treatment he reminds us that we have two factors to deal with: first, a loss of blood which in some cases is enormous, and secondly, the presence of a foreign substance dissolved in the plasma; and our endeavors must be directed toward assisting nature to eliminate these products and toward keeping the patient alive until this is done and until the loss of blood is compensated for. Many drugs have been vaunted; one man pins his faith to chloroform, another to boracic acid, a third to tannic acid, a fourth to salicylate of soda, and another cracks up Cassia O'Beariana. The author has tried them all, but in his experience just as many cases get well without them as with them. As he before stated, the time for specific treatment is past. Bearing this in mind, the indications for treatment are obvious, but unfortunately there are, owing to the nature of the symptoms, often great difficulties in carrying them out.

The first indication is to get rid of the morbid products by means of the various excretory organs of the body. Nature is already doing its best in this direction. The kidneys are excreting the hemoglobin as fast as they can, and are being subjected to a severe strain in the effort; the liver cells are dealing with the dissolved hemoglobin, as may be seen in the hepatic cells loaded with yellow pigment; the stomach is endeavoring to get rid of the products of the excessive action of the liver; and the sweat glands are also assisting in getting rid of the poison. But these very endeavors tend to make our task more difficult, for the vomiting is so excessive that it becomes itself a morbid process, and closes up to us the principal channel by which food and remedies can be given.

The first step which the author invariably takes is to see that the intestinal canal is thoroughly emptied. Of all purgatives, the one which experience has shown to yield most benefit is calomel, and it should be freely given, 5 to 10 grains, preferably the latter, at the commencement of an attack. He considers that this should be done as a matter of routine in all cases, whether constipation is present or not, and almost invariably a large quantity of black, foul-smelling feces will be got rid of. It relieves the liver, and no doubt has a certain antiseptic action on the intestinal canal. If

given with a very little water it will be retained, or, at any rate, a sufficient quantity to have some action on the liver. Should the bowels not act freely within a short time it is as well to give an effervescent saline, and if this is vomited, to have recourse to a large enema of soap and water with a little castor oil.

Our next endeavor must be to aid elimination by the skin and kidneys, and we must pay special attention to the tendency on the part of the latter to give way under the strain to which they are subjected, and must endeavor to prevent suppression taking place. It is here that we find our greatest difficulty. How are we to administer diaphoretics and diuretics with the stomach in such an irritable state that every teaspoonful of water is brought up? In the milder cases, in which this irritability does not exist, nothing can be better than the simple old diaphoretic mixture of liquor ammonii acetatis and spiritus ætheris nitrosi, with the addition of acetate or nitrate of potash. It appears to be sound treatment to endeavor to render the blood as alkaline as possible, and thus dissolve the large quantities of black pigment with which the different organs are loaded. But in severe cases, in which vomiting is constant, the stomach must be left entirely alone, and the sooner efforts to introduce food and drugs by the stomach are given up the better it will be for the patient. In such cases the author begins the day by administering every morning a very large enema of warm water, generally with a certain amount of sodium chloride in it, so as to form a normal saline solution. The quantity must be large, as large as the patient can contain without distress—quarts, if possible; and if it is injected slowly and high up with a long, soft rectal tube, it is astonishing how large an amount can be given. A good deal of this is soon ejected, but there is no doubt that a considerable amount is absorbed. It acts beneficially in two ways: first, it washes out the lower part of the intestinal canal, and thus prepares the way for the nutrient and medicinal enemata of which the writer speaks shortly; and secondly, that portion which is absorbed acts as a diuretic by adding fluid to the blood. This is a very important item in the treatment when no fluid is being given by the mouth, and the large enema may be repeated during the day. Diuresis may also be assisted by adding digitalis to the nutrient enemata and by the rectal administration of alcohol. A large sinapism to the loins is of service in lessening the congestion of the kidneys. In one case the writer used dry cupping with benefit.

It is recommended that normal saline solution should be slowly introduced into the connective tissue of the thigh or abdomen; but it is a very slow process to get any quantity of fluid absorbed in this way. It has no advantage, so far as the author can see, over the method given below, namely, intravenous injection of normal saline solution. He has now used this in several cases. In the first the patient was moribund, and while the injection had an extraordinary stimulating effect, it was only temporary, and he died a few hours afterward. In the other cases the operation was done earlier and recovery took place.

In all cases of severe hemoglobinuria the volume of the blood is much diminished, and the addition of one to two pints of normal saline solution to the blood not only acts directly by stimulating the heart, but, by increasing the blood-pressure, tends to produce diuresis. The author believes that in many cases of hemoglobinuria the suppression of urine is not only due to the mechanical blocking of the renal tubes and to the secretory powers of the renal epithelium becoming exhausted, but to this diminution in the actual volume of the blood. In all cases, then, where there is intense gastric irritability, a failing pulse, great restlessness, and diminishing urine, do not hesitate to give an intravenous injection. The effect on the patient is immediate; his pulse improves, he gets brighter and more talkative, and in an hour or two there is an increased secretion of urine. The process is a simple one, but the author

describes it briefly for the benefit of those who may be isolated in the "bush."

He uses a glass reservoir, which is carefully sterilized and filled with normal saline solution at a temperature of about 100° F. The most convenient way to prepare the solution is to dissolve a drachm of sodium chloride in a pint of boiled water. There should be a stop-cock or a clip (bulldog forceps will do very well) in the course of the tube, at the end of which a small cannula with a rounded end should be carefully tied. In the absence of a special cannula the author used one out of an aspirator case. One of the large veins at the bend of the elbow is selected, the skin carefully cleansed, and the vein dissected out. A ligature is passed under the vein and tied, the vein is opened above this, and the cannula inserted. Another ligature is then tied round the vein and cannula, and the saline solution allowed to enter the circulation. When sufficient has been injected the cannula is withdrawn, the second ligature is drawn tight, and the operation is complete. As a rule a pint will be sufficient, but the pulse must be watched, and more can be injected if necessary. Chloroform is not required, as in bad cases the senses are blunted and there is little pain.

So far as excretion by the skin is concerned, the author does not advocate giving hypodermically or otherwise pilocarpine, phenacetine, or similar drugs. They have a somewhat depressing action, and it will be found that with the treatment here described the skin remains moist. The patient must be kept warmly, but not oppressively, covered, and draughts avoided.

Our second indication is to counteract the malarial element in the attack, and this involves the question whether we are to give quinine or not. On this point there is considerable diversity of opinion. It will depend to a large extent on whether there is evidence of active malarial infection. If malarial parasites are found in the peripheral circulation, the author thinks it wise to give one dose at any rate, watching the effect on the urine, and if there is any recurrence of hemoglobinuria, the quinine should be repeated. If there is any history of the attack having been caused by quinine it should, of course, be withheld. The safest method is the hypodermic, and the neutral hydrochlorate is the best salt. Five to eight grains may be given in this way. Another very useful method is the administration by rectum. Fifteen grains of hydrochlorate can be dissolved in a nutrient enema. Quinine does not make a good mixture with a milk enema.

Methylene blue has been recommended. The author has tried it once, but it has the great disadvantage of masking the color of the urine.

The third indication is to support the strength while the poison is being eliminated. In the milder cases food may be given in small quantities, and frequently by the mouth, in the form of essence of beef, sterilized milk and soda, thin arrowroot, and similar foods. A little brandy or champagne at intervals is beneficial. Where vomiting is a prominent and distressing symptom, once more leave the stomach alone. The strength can perfectly well be supported for several days by rectal feeding. After the large enema has been given in the morning, the author allows the patient to rest for a little, and then commences nutrient enemata, giving them every two hours through the day. He has generally given small enemata, 2 to 4 ounces, but larger ones, say 7 to 8 ounces, if they are thrown high up and very slowly with a long rectal tube, will often be retained. They can then be given at longer intervals and disturb the patient less. Peptonized milk and egg is one of the best forms of food to give in this way. Fresh milk is rarely obtainable in West Africa, and in its absence sterilized milk in bottles may be used, or, failing that, unsweetened condensed milk. As a more stimulating enema half an ounce of brandy may be given with advantage.

The author, however, gives a word of warning. It is very tempting when the heart is failing to keep pouring in alcoholic stimulants such as brandy, but he believes that there is a very distinct danger of over-

stimulating the heart. The result is that after a time it refuses to react to the stimulus and collapse takes place; 6 to 8 ounces in twenty-four hours is as a rule sufficient. Drugs can be added to the nutrient enemata, such as digitalis, ammonium carbonate, or strychnine. In the later stages the writer has often given strychnine hypodermically, in the hope of keeping the heart going, until nature would be able to reassert itself, but he cannot say that he has seen it do any permanent good in such cases.

The next indication is to alleviate any distressing symptoms. The most prominent of these is the vomiting. A large sinapism to the epigastrium gives a certain measure of relief, but rarely arrests it. He has found the ordinary sedative drugs, such as bismuth, oxalate of cerium, etc., of very little use. Minim doses of pure carbolic acid in a little water appear sometimes to soothe the stomach, and morphine or opium is sometimes useful. Small pieces of ice to suck do good sometimes, but in one or two cases the author has seen it aggravate the vomiting. The best thing is what he has already insisted upon—leave the stomach alone; do not go on teasing it by pouring in a lot of drugs in a vain attempt to soothe it. But there is an expedient which will be found of great service, and will often afford marked relief for a considerable time, and that is to wash the stomach out. By this the author does not mean to use the stomach tube, but to give the patient as much water as he can drink, and let him vomit it. The constant feeling of nausea and the retching seem very often to depend upon the presence in the stomach of a small quantity of irritating bilious matter, which the patient is unable to bring up, and if this is washed out along with the water, two or three hours' relief may often be obtained. And occasionally a copious draught of water has a curious result—it stops the vomiting entirely. The author has seen cases in which unceasing and distressing vomiting stopped entirely after the administration of a couple of tumblerfuls of water.

The great thirst may be alleviated by allowing the patient to wash out his mouth with water acidulated with fresh lime-juice, or by painting the tongue with a mixture of glycerin and citric acid. In cases in which fluid can be retained the writer allows the patient to drink plenty of water or barley-water.

For the restlessness and depression little can be done; they will disappear as the hemoglobin is excreted. The dull, aching pain in the back may be sometimes relieved temporarily by friction with a liniment containing opium.

Occasional sponging of the body with tepid water with a little eau de Cologne or Florida water and fresh lime-juice in it will be found very soothing. Frequent bathing of the hands and arms is extremely refreshing.

For the sleeplessness which is generally present the author gives a hypodermic injection of morphine, if absolutely necessary, and he has seen no harm result from it. Bromides are somewhat depressing.

The author makes mention of a drug which has recently assumed some prominence, namely, Cassia O'Beariana, first described by O'Sullivan Beare in East Africa, and for which a specific action has been claimed. As originally used, it was given in the form of a decoction in large quantities, a teacupful every two hours, but Dr. Beare claims that the fluid extract well diluted with water has the same effect. The explanation of its action appears to be that it is a means of introducing a considerable quantity of fluid into the body, and if it has a sedative action on the stomach, as is would seem to have, it is undoubtedly a preparation of some value; but it is very doubtful if it has any specific action.

MUCOUS COLITIS.

HARRISSON, in the *Lancet* of September 21, 1907, tells us that the treatment of mucous colitis resolves itself into that for the relief of the attack itself, and that calculated to remove the cause of the disease. The author first considers the treatment of a patient suffering from a definite attack,

and here the chief symptoms which require relief are the pain and constipation. Now, as it is decided that the pain is entirely due to efforts on the part of the bowel to remove the mucus which has been secreted into the intestines, treatment must be directed to the bowel to help it to completely evacuate its contents. This may be attained in two ways, namely, by the use of aperients and by enemata. The aperient which has been of most service in the cases which have come under the author's own observation is certainly castor oil, and it should be given in fairly large doses and repeated frequently; thus it has been the practice of the writer to order doses of half an ounce to be given three times a day until the passage of mucus ceases, and then to be diminished to half an ounce daily.

In a few cases there seems to be a great objection to the use of castor oil on account of its nauseating propensities, and in these cases the author has substituted calomel in doses of two grains three times a day. Enemata of ordinary soap and water, or containing four or five ounces of olive oil, have certainly been beneficial and have materially assisted the aperient in its action, and in cases in which there is much flatulent distention of the colon the addition of half an ounce of oleum terebinthinæ to the enema is useful. Irrigation of the colon certainly helps in the more rapid separation of the mucus from the walls of the intestine; and for this purpose ordinary warm water may be used at the temperature of the body, the injection being carried out by means of a funnel and a large-sized india-rubber catheter passed through the anus and gently carried higher as the water is poured in, as by this means the rectum is distended and the point of the catheter is not so likely to get caught in the folds of the mucous membrane of the intestine. At least two quarts of warm water should be employed at each injection. Various substances have been recommended to be used in solution for these high injections, such as sodium bicarbonate, sodium chloride, protargol one per cent, and silver nitrate one-half per cent, gradually increased in strength; but during the height of the attack it has been the experience of the author that plain warm water affords the greatest relief, and afterward one of the above solutions may be used once a day to prevent, if possible, the further hypersecretion of mucus.

The patient should be kept in bed so long as the pain and passage of mucus continue, and hot applications to the abdomen should be used freely. For this purpose flannels are wrung out in hot water and a few drops of turpentine or liquid extract of opium or the tincture of belladonna sprinkled on. These hot applications certainly afford a sense of comfort and give a feeling of relief on account of their antispasmodic tendencies, and so relieve the irregular peristalsis to a certain degree.

With regard to diet during the height of the attack, nothing should be given for the first few hours until the more urgent symptoms have been relieved, and then small quantities of milk, previously peptonized, may be given, the quantity being gradually increased as the patient improves. Many authors have recommended the use of opium or morphine during the height of the attack, but he thinks that these drugs should not be employed for the relief of pain in this disease because their use will certainly check the peristaltic contractions and will increase the already existing constipation; and, moreover, as the persons who suffer from mucous colitis are nearly always of a neurotic temperament, they are also persons who would speedily develop a habit and so would always seek relief from pains of a most trivial character in drugs of this description. Of late years in obstinate cases operations have been much recommended with a view to giving rest to the colon in the hope that by so doing a complete cure might be the result.

The operations which have recently been tried are two in number. The first consists of making a lateral anastomosis between the ileum and sigmoid. A valve-like opening is then made in the cecum, into which a rubber catheter is placed, and the wound is sewn up, leaving the catheter in the cecum, as in the case of a gastrostomy;

by this means the colon is given complete rest and thorough irrigation of the large bowel may be performed. The result of this operation has not been satisfactory except temporarily; and on fully considering the nature of the disease a complete cure could hardly be expected, for the mucous secretion takes place as a result of a secretory neurosis and not from any local affection of the colon, and therefore any treatment which is directed toward giving the large bowel complete rest will not only not cure the disease but will be more likely to predispose the patient to a similar attack; moreover, the mental effect on the patient cannot be very beneficial, and the nutrition of the patient must also suffer very materially from cutting out so large an absorbing surface from the alimentary tract.

The second operation, which is being tried, is more simple in nature, and consists in opening the abdomen and bringing the appendix to the surface and suturing it in position. Having secured it, the distal end is removed, and so the appendix is made to take the place of the india-rubber catheter of the first operation. In this operation the colon is not given complete rest as no anastomosis is made with the sigmoid. The results from this operation ought to be more satisfactory than in the former case, because the functions of the colon are not interfered with and irrigation of the large intestine can be carried out very fully. Unfortunately the results of this operation are not known yet, as it has only recently been undertaken. But even if it secures a more rapid disappearance of the symptoms during an attack the result will not be permanent unless the further treatment of the patient is correctly carried out; and this treatment must be directed toward securing a daily action of the bowels, combating the peculiar nervous condition present, and to removing any obvious organic disease which might have a deleterious effect by reflexly inducing the neurosis.

In the first place a suitable diet must be recommended, and about this the opinions of the various authors of papers on the subject are diametrically opposed—for example, von Noorden recommends a diet consisting of indigestible materials which leave a large residue, and he says that "the change from the patient's ordinary diet should be made suddenly, for then the unpleasant consequences are not nearly so lasting, but the nausea, sense of fulness, rolling noises, occasional pain, and dyspepsia pass off in from two to four days; whereas if the change from a light diet to a very indigestible one is made gradually the unpleasant symptoms remain for a much longer period." Langenhagen, on the other hand, says: "The diet is to be carefully regulated, so as to avoid all indigestible material or such as could possibly produce fermentation." This latter form of diet certainly appears to be more in accordance with the views already expressed in this thesis; for giving a carefully selected diet of highly nourishing substances must be the best means of improving the patient's nutrition and so of improving the neurasthenia or other disease of the nervous system. A daily evacuation of the bowels is indispensable, and to attain this object full use of aperients must be made; and the particular one which has produced the best results in the author's hands is certainly castor oil, given in half-ounce doses daily, in the early morning, and continued for weeks, or months, or even after apparent recovery has taken place. If castor oil cannot be tolerated one of the other aperients must be tried, such as cascara sagrada, calomel, or the saline aperients, etc. Occasional use of the enema is also of great assistance. Abdominal massage is certainly beneficial and should be performed for half an hour daily until the action of the bowels becomes regular. High-frequency currents have been recommended, and a few of Hale White's patients derived some benefit, but in the majority no satisfactory result has been obtained from their application. Intestinal antiseptics are worse than useless.

With regard to the treatment of the nervous symptoms hydrotherapy and general massage are most useful, and patients are best treated away from home, where they can secure greater freedom from business

or social worries. If it is found impossible to treat the nervous condition and at the same time to give proper attention to securing a daily action of the bowels, every effort must be made to empty the large intestine, and doing this will so improve the general condition of the patient that in the majority of cases there will be an improvement in the nervous condition as well. If the disease is associated with any organic trouble, such as appendicitis, movable kidney, etc., these conditions should receive the appropriate treatment, operative if necessary, and if general enteroptosis exists an abdominal belt should be worn.

THE TREATMENT OF CHILBLAINS.

GARDINER in the *Practitioner* for January, 1908, gives the following advice:

Local Measures.—Foot and hand wear must be carefully chosen; warm it must be, tight it must not be, and it should not be rough and irritating.

Massage is very helpful, but especially so as a prophylactic. In the erythematous stage it may be too painful to be borne; again, here careful directions as to method must be given.

Two drugs stand out preëminently as of value in the early stages, viz., ichthyol and formaldehyde.

Ichthyol is well known to have a special effect in reducing congestion. Any strength may be used, but 10 to 20 per cent in lanolin serves most purposes. (The writer has used it in full strength painted on.)

This ointment, spread thickly on linen, and worn at night on the affected parts, often dispels a commencing attack after a few applications. During the day it may be used in the form of plasters, if convenient.

With the same end in view the author has tried adrenalin and adrenalin and chloretone ointments, in a like manner, but although praiseworthy and more suited to esthetic minds, the author does not find them so useful as ichthyol.

Formaldehyde, an equally powerful drug, is one requiring much more care to employ satisfactorily. The odor is pungent, and if there is the slightest abrasion of the skin, smarting effects are still more disagreeably evident. In ointment form it may be used in 10- to 50-per cent strengths: this method answers best when the patient has a sensitive skin; when, however, we have to deal with coarser skins, the remedy may be used pure.

The astringent action of the drug may go too far, and then the horny layer of the skin becomes hard and cracks. Consequently, after a few days it is advisable to stop using it, and apply lanolin or vaselin. It can be subsequently resumed if necessary. As an antiseptic it also prevents the complication of subsequent infection of the parts—there being many cases in which recovery is prolonged by the intrusion of surface organisms. If a distinction is to be drawn between these two agents, formaldehyde might be classed as more effective, more lasting in its results, but much harsher in its action, therefore more suited for the male sex, whilst ichthyol might be described as more soothing, more simple in its method of application, and undoubtedly better suited for delicate skins. Treatment may accordingly, in some cases in which there are cracks, be started with ichthyol and finished with formaldehyde.

Various applications are also commonly applied at this stage. Of these, iodine, either as tincture or painted on in collodion (2-per-cent iodine), silver nitrate in solution, and camphorated spirit are best known.

Electrical methods have long been recommended, generally galvanism, but as this necessitates, in its simplest form, a considerable number of batteries, it is not universally handy. The faradic current is easily used, requiring only a small coil with a bichromate cell, two small earthenware basins, such as are used in cooking, two small copper plates, and connecting wires. Warm water with a teaspoonful of salt is put in each basin along with a copper plate electrode, which is connected with a terminal of the secondary coil. The current may be varied by raising or lowering the

zinc in the bichromate cell, by the draw-tube of the coil, or by altering the depth or position of the copper electrodes in the basin. When the hands or feet are involved, the secondary circuit is completed by the patient placing an affected member in each basin. When other parts, such as the nose or ears, are involved, then one copper electrode is covered with gauze, soaked in salt water, and applied to the affected spot; the circuit being again completed by placing a hand in the other basin, which contains the remaining electrode. Ten minutes of this treatment every night will act promptly in many cases. Recently a patient had a severe attack on the left little finger and ulnar aspect of the palm. There were two large chilblains, and he could not bend the finger; he applied this method, and next day the pain was away, and only slight erythema left. Two sisters, both affected regularly every winter, came under observation. One, more delicate and suffering from mitral stenosis, used the above means, and no chilblains appeared; the other did not, and suffered. The plan suggested above is not new, but is apt to be overlooked in the rush after still more modern ideas. It may be said that the writer has found it very satisfactory chiefly in the early stages, and while not interfering with the action of other remedies, produces more prolonged results.

An *x*-ray and high-frequency outfit is not always present, but if available is more powerful than the faradic current, can be used in all stages, and is possibly more lasting in its effects. The treatment is much more expensive, but in severely recurring cases should be tried. So far, with the writer's limited experience, it is not possible to say which is better. Three cases have been tried with *x*-rays and three with high frequency, and although the action of each is different, both were successful.

X-rays have an atrophic effect, this being more pronounced on unhealthy tissue, hence they reduce inflammation and remove pain. Applied, as they have been by the author, in doses of ten minutes' duration, with a hard tube with 5 milliamperes in the secondary circuit, one or two applications have been followed by benefit; when continued thrice weekly, stopping short of reaction, the chilblains eventually disappear.

High-frequency currents can be applied by the effleuve, or by the vacuum electrode. In all cases it is wise also to improve the general tone by giving, at the same time, some ten minutes of autocondensation on the couch.

Theoretically, one might advise the use of *x*-rays in cases consequent on passive congestion, while high-frequency currents might be recommended where there was vasomotor nerve spasm.

In the ulcerating stage the most convenient application, apart from these electrical methods, is the following paste:

℞ Hydrarg. ammoniati, gr. v;
Ichthyolici, min. x;
Pulveris amyli,
Pulveris zinci oxidi, ää ʒij;
Vaselini, ʒss.

This spread unsparingly on linen, and changed frequently, suits most cases. If the ulceration is not severe, or healing is advancing, the recovery may be completed by Beiersdorf's zinc-ichthyol salve muslin.

In conclusion, by the various local means mentioned, coupled with general treatment, all cases should yield, and if failure occurs, suspect a wrong diagnosis, and that the right one may be lupus erythematosus.

THE SPECIFIC ACTION OF RADIUM AS A UNIQUE FORCE IN THERAPEUTICS.

Abbe in the *Medical Record* of October 12, 1907, reaches the following conclusions:

Radium ranks, not with caustics, cautery, antiseptics, or medication, but with specifics.

This does not mean a "specific" for cancer, in the popular sense, but for erratic cell growths constituting some types of tumor tissue in the earlier stage of invasion, or of moderate development.

Details of the methods of using it have not yet been fully worked out. The dosage, so to speak, or time of exposure necessary for curative action, is as yet empirical.

Some apparent cures of small epithelio-

mas or sarcomas have endured already more than three years.

A photographic plate provides a good test, to show the working force of an unknown specimen, in comparison with one of standard strength.

It is not entirely a mysterious force, but, in part at least, is an electric discharge, essentially of negative elements. Hence, as far as it is possible to say, it suggests a theory of its action, in that it may supply an element of electric force vital to normal and orderly growth, the loss of which may have caused a disorderly cell growth which, in the aggregate, constitutes tumor masses.

It is supplementary to Roentgen rays, and in some cases is efficient where they fail.

The overaction of strong radium is destructive and vitiates the benefit of moderate use.

The best results have followed one hour's exhibition of the working unit (10 mgr. R. Br.) on small growths, and three to four hours on larger ones, with an interval of one month for study of the effect.

Ischemia of the parts during treatment greatly enhances its action.

Pigmented moles, melanotic growths, and giant-cell sarcomas, like epithelioma of the eyelids, face, and body, are particularly susceptible to its curative action, as a specific agent. But its value in nevoid and angiomatous tumors is due to its irritant action, producing obliterating endarteritis and fibroid changes.

SUBCUTANEOUS INJECTIONS OF AIR AS A MEANS OF RELIEVING CERTAIN PAINFUL MANIFESTATIONS.

GUBB in the *British Medical Journal* of November 9, 1907, writes of a plan of treating neuralgic pain.

Cordier's method was that employed, and the object is to distend the tissues by the insufflation of air beneath the skin. The purely mechanical action of the distention was proved by the fact that the results were approximately the same whether plain air, oxygen, hydrogen, nitrogen, or carbonic acid gas was employed. The only difference observed was in the comparative rapidity with which they underwent absorption. With the experience of many hundred injections, he states that the injections are perfectly innocuous, that they require no special apparatus or appliances, nor even any special operative dexterity, and that in a whole series of painful affections they yield results often very satisfactory and sometimes really remarkable.

The procedure is simplicity itself. The pumping apparatus is supplied by an ordinary rubber bulb provided with an elastic reservoir such as is used for Paquelin's thermocautery, a length of rubber tubing in which is inserted a glass bulb filled with sterilized cotton, and an iridio-platinum needle. The latter is sterilized just before use by heating in the flame of a spirit lamp. The fingers of the operator and the skin of the patient must of course also be sterilized. It is well to have an idea of the cubical capacity of the bulb in order to know how much air has been introduced.

Having taken these preliminary precautions, the needle is plunged through the skin over the seat of the pain; then, after waiting a few moments to see that no blood exudes, showing that the needle has not entered a blood-vessel, the insufflation is commenced. This should be done gently, very slight pressure sufficing to overcome the elasticity of the skin. A rounded swelling forms round the seat of puncture, and when the air reaches a vascular or nervous sheath it rapidly spreads along it, and secondary swellings may form at a distance. These secondary ramifications are specially apt to form in the limbs, where the sheaths are more numerous. The skin at first becomes blanched, but this soon gives place to a pronounced redness which persists for some hours. The air takes several days to undergo complete absorption, and under the influence of muscular contraction travels far and wide, so that the characteristic crepitation of "surgical emphysema" may be felt at spots distant from the seat of the original injection. No pain whatever is experienced, even when comparatively large quantities of air are injected—at most a sense of dis-

tention, "pins and needles," or pin-pricks. Cutaneous sensibility is at once diminished, the skin becoming more or less numb.

The needle having been withdrawn and the puncture sealed by a drop of collodion, the next step is to massage the part. The subcutaneous air must be alternately dispersed and brought together again, especially over the painful spots. This massage is an indispensable part of the procedure, and must be conscientiously carried out; indeed, patients should be directed to repeat the process daily as long as any resonance remains.

The procedure is applicable to the relief of pain due to all forms of neuralgia and neuritis. The only precaution is to vary the quantity of air injected according to the anatomical structure of the part. For instance, we may inject 200 or 300 cubic centimeters of air in the gluteal region, while over the thorax from 10 to 30 cubic centimeters will be enough. In the neuralgic pain that follows extensive zona it is best to make several small injections, one over each painful spot. In intercostal neuralgia one small injection behind near the vertebral column should be made, and another in front, about two inches from the middle line.

In the treatment of sciatica the injections should be made in the lumbar region, on the outer side of the thigh and on the superoexternal part of the leg, round about the head of the fibula, as well as over any painful spots in the lower part of the leg and the dorsum of the foot, to be followed in every instance by systematic massage.

The only forms of neuralgia which the author has not so far ventured to treat by this method are those of the face, though there is no obvious reason why, in cases that prove refractory to the action of analgesics, it should not be employed. In this situation, however, 3 or 4 cubic centimeters of air should suffice..

In no instance has any mishap attended this mode of treatment, although it has now been practiced many thousand times, so that it may be safely affirmed to be devoid of risk. Nervous patients, especially women, occasionally complain of a feeling of constriction in the neck when the air finds its way into that region, but the sensation is very fugitive and never amounts to serious inconvenience.

The author's personal experience includes eleven cases of sciatica, several of them being severe and of some months' standing, and in only one case did the result fall short of his expectation, the patient being a highly neurotic elderly woman, who went to Aix-les-Bains for the treatment of arthritis deformans and acute sciatica. Even in that case some relief followed each injection, five in all, but the pain recurred a few days later. He has often found it necessary to repeat the injections, but never more than three times, except in the case just referred to.

Gubb has also treated several cases of neuritis of the brachial plexus, two in the acute stage, and very marked relief, which was maintained so long as the muscles were kept at rest, was afforded. Tempted by the improvement, some of the patients resumed the use of the arm and provoked a return of the pain, though in a milder form.

ON "CHLORIDE DEPRIVATION" IN THE TREATMENT OF BRIGHT'S DISEASE.

STRAUSS in *Folia Therapeutica* for October, 1907, says with regard to chloride deprivation that it may be divided into two parts: (1) The alimentary, or regulation of the intake of chloride into the body; (2) the medicinal, or measures for increasing the output of chloride from the body.

For reducing the chloride intake, those foods should be withheld from the patient in which a high percentage of sodium chloride is either present from the first or is acquired in the course of their preparation. In this connection experiments were carried out by one of the writer's pupils (Dr. Tischler) from which it appeared that by the ordinary means of preparing food, the raw material of which is poor in sodium chloride, a relatively large percentage of sodium chloride can be acquired. This applies especially to soups and prepared meat

and vegetables. It is not enough, however, to demand that great sparsity of salt shall be observed in the preparation of the raw material. What is also required is that those foods shall be preferred which contain but little sodium chloride in themselves, and which require but little in their preparation for the table. Such foods are to be found in milk and fruit, and in the various kinds of berries. Bread, as ordinarily made, is by no means poor in sodium chloride, and the use of bread prepared without salt is therefore to be recommended. Bouillon and meat broths should be replaced by soups made from fruit, and eggs must be prepared with a minimum of salt; butter should also be used unsalted. Of other products of milk, the more piquant cheeses usually contain from one to three per cent of salt. The chloride percentage of the various mineral waters is by no means a negligible quantity where chlorine deprivation is concerned, and only those containing a minimum of sodium chloride can be recommended. For domestic purposes it will be found practicable to measure out about a teaspoonful of salt to be set aside for the whole day's consumption, and distributed over the various culinary operations.

For increasing the chloride elimination, the preparations of caffeine are well adapted, especially diuretin and theophyllin. The writer was able to show in his first publication that under the influence of diuretin not only was the total quantity of urine increased, but that notwithstanding the increase in quantity the percentage of sodium chloride was considerably raised. Indeed, it frequently happened that the effect of the diuresis in combating the anasarca was especially marked when, under the influence of diuretin, the percentage of sodium chloride in the urine was considerably raised. While it was formerly held that the caffeine preparations exercise their effect by direct stimulation of the renal epithelium, Otto Loewi has shown that their action is to be referred to the production of an intense active hyperemia of the organ. This fact is not only of theoretical but also of practical interest, as voices have lately been raised in warning against the use of "epithelium-stimulating" caffeine preparations in cases of advanced parenchymatous lesions. The author, although having employed these preparations in a large number of cases, even of the most severe parenchymatous nephritis, has never seen any untoward result which he was in any way able to attribute to diuretin. The desired plethora of blood in the kidneys is in his experience best attained by combining diuretin with a cardiac tonic, and of these digitalis has in his hands given the best results.

The following combinations will be found serviceable:

℞ Pulv. fol. digital., gr. 1½;
Diuretin, gr. xx;
Sacchar. alb., gr. iv.

Misce; ft. pulv. No. x. One powder to be taken three times a day.

℞ Diuretin, ʒiij;
Extr. digital. fluid, m. xxv;
Ol. menth. pip., m. iij;
Aquæ destillati, q. s. ad fʒviij.

One tablespoonful every three hours.

In a great many cases the disappearance of dropsy may be brought about by diminishing the ingestion of sodium chloride only; in other cases, however, combined treatment by both alimentary and medicinal means is necessary, and it is only when the desired result cannot be arrived at by one or both of these means that capillary drainage of the subcutaneous tissues or the tapping of effusions into cavities need be considered. In the opinion of the author, however, the latter procedure merits as frequent use in private as in hospital practice.

An account of the regulation of chloride metabolism cannot well be concluded without some mention of the question of the consumption of water. This question is a many-sided one, and as many views are held cannot here be the subject of detailed discussion. It may, however, be pointed out that deprivation of water alone, without withdrawal of chloride, is purposeless, since with the chloride intake remaining undisturbed thirst will be provoked. We know that this thirst occurs in response to a necessity of the body, since the accumulation of

sodium chloride creates a demand for water, and the water consumed serves the purpose of diluting the sodium chloride in the body juices until their normal concentration point is reached. The question as to whether in addition to sodium chloride deprivation the intake of fluid should also be restricted, is variously answered by different authorities. The writer has always expressed the opinion that, in cases of existing, or threatening, uremia, the intake of water should not be restricted; and he still holds this view, since dropsy is easier to deal with than uremia. Even in the absence of uremia, or symptoms suggesting it, he is not accustomed to withhold water to such an extent that the patient is tormented with thirst.

ADENOIDS IN INFANCY.

MORSE states in the *Journal of the American Medical Association* of November 9, 1907, that adenoids will almost always be found in those babies who are subject to frequent "colds in the head," and are undoubtedly most important in their etiology. In fact, repeated "colds in the head" are rarely met in infancy when there are no adenoids. The infants continue to have "colds," moreover, in spite of local or general treatment until the adenoids are removed. A "cold in the head" in infancy is not the simple thing that it is in older children and in adults. It is often a serious matter, and in some cases may even prove fatal. It hardly seems worth while, however, to report specific instances in which babies who had had repeated "colds" have been completely relieved by the removal of the adenoids, as there is nothing to report except the bare facts.

Adenoids are also one of the commonest, if not the most common, cause of chronic "snuffles" in infancy. They are usually overlooked in this connection, however, because the baby does not keep its mouth open, snore at night, or have the typical facies of adenoids in later childhood, there being apparently a general impression that there can be no adenoids, at any rate no adenoids of importance, unless these symptoms are present. In infancy, however, chronic "snuffles" is almost as suggestive and characteristic of adenoids as these more marked symptoms are in childhood. In most cases the "snuffles" continue until the adenoids are removed. In some of the mild cases, however, operation is not necessary, and local astringent and stimulating treatment gives good results. The author uses the following mixture:

> Iodine, ¼ to ½ grain;
> Camphor,
> Menthol, āā ½ to 1 grain;
> Benzoinol, 1 fluidounce.

From five to ten drops of this mixture are put into each side of the nose with a dropper every three or four hours, with the baby lying on its back so that they may run through into the nasopharynx. This is altogether the best way of making applications to the nose and nasopharynx in infancy, sprays being of little use at this age because of the fright and struggling which they induce.

THE TREATMENT OF TRIFACIAL NEURALGIA BY MEANS OF DEEP INJECTIONS OF ALCOHOL.

In the *Journal of the American Medical Association* of November 9, 1907, PATRICK tells of his experience with this plan of treatment. He adopted entire the method of Lévy and Baudouin, including their needle, as it seems to him to be the simplest and safest. The aim is to reach the inferior maxillary branch of the fifth nerve just after its exit from the foramen ovale, the superior maxillary branch just after its exit from the foramen rotundum, and the first or supraorbital branch immediately after its entrance into the orbit, and to place an injection of alcohol at this point, within the nerve sheath, if possible. The instrument employed is a straight needle, 1.5 millimeters in diameter and 10 centimeters long, fitted with a stylet exactly like a trocar, except that in this case the needle is sharp and the stylet blunt. The needle is marked in centimeters from the point up to

five, so that the operator may know what depth he has reached. In making the operation the stylet is at first slightly withdrawn and the puncture made with the sharp point of the needle. After the point is well through the skin and subcutaneous tissue the stylet is pushed home. In this position its end is flush with the needle point, making a blunt instrument for the remainder of the penetration; this to avoid injury of deep blood-vessels. Having reached the proper depth, the stylet is withdrawn, the syringe, already filled, is fitted to the needle, and the injection slowly made. Ordinarily he allows the needle to remain *in situ* a couple of minutes to avoid oozing from the puncture. Sometimes there is no bleeding. Pressure for a few minutes has always controlled such oozing, as the writer has seen. The puncture dry, a touch of collodion serves as dressing.

The solution first used is 75-per-cent alcohol, containing a little chloroform and a little cocaine. The author now begins with the following:

> Cocaine hydrochlorate, gr. j;
> Chloroform, m. x;
> Alcohol, ℥iij;
> Distilled water, sufficient to make ℥ss.
> Mix.

Of this he injects 2 cubic centimeters. For succeeding injections the proportion of alcohol is increased, so that if several are needed for the same branch the strength of the solution reaches about 90 per cent. For this stronger solution he doubles the amount of cocaine, as it is more painful than the weaker. Into his earlier injections, following the suggestion of Lévy and Baudouin, he puts a moderate dose of morphine, but one of his patients vomited rather severely several hours after the first injection, so he has used no morphine since; it is not needed. The injection once made, the pain is astonishingly slight. Ordinarily there is only a rather uncomfortable sense of pressure or tension, sometimes some diffuse headache, which in one case lasted for two days, but no real suffering. For reaching the different branches of the nerve the procedure is as follows:

For the inferior branch the needle is inserted at the lower border of the zygoma 2.5 centimeters in front of the descending root of the zygoma, which always can be felt, and almost coincides with the anterior bony border of the external auditory meatus. The needle is directed slightly upward so as to hug the base of the skull, and a little backward, and at a depth of 4 centimeters should reach the nerve at its exit from the cranium.

To attain the middle branch the line of the posterior border of the ascending (orbital) process of the malar bone (ascending to articulate with the frontal) is prolonged to the lower border of the zygoma and the needle inserted .5 centimeter posterior to this point. It is directed vertically to the anteroposterior line, but inclined slightly upward in a direction which would attain, at the depth of the foramen rotundum, the level of the inferior extremity of the nasal bone. At a depth of 5 centimeters the nerve is reached at its emergence from the foramen rotundum into the pterygomaxillary fossa.

Lévy and Baudouin advise reaching the supraorbital branch by inserting the needle at the external margin of the orbit opposite the frontomalar articulation (suture), passing it along the external orbital wall to a depth of 3.5 centimeters, when the point should reach the nerve. This injection the author has made but once.

In a consideration of any new treatment the questions to be answered relate to its various results and difficulties. These questions he takes up in the rather illogical order of uncertainties, difficulties, dangers, unpleasant effects and complications, and therapeutic results.

It requires little experience or reflection to realize that no one can uniformly touch with a needle a given point 4 or 5 centimeters (two inches) below the surface. To this physiologic or mechanical uncertainty of accuracy is added, in the present procedure, the uncertainty of cranial and facial variations. Skulls vary greatly in size and shape, which means not only that the foramina in question are at various depths

from the zygoma, but that their location relative to other points cannot always be the same. In some persons the zygomatic arch is much shorter than in others; in some its lower border is higher as regards the base of the skull. Some skulls have a very wide bony ridge external to the orbit; others a narrow one, and the angle of its posterior border (our landmark) shows a variation of a good many degrees. According to the experience of the author, in about every fifth person the coronoid process of the inferior maxilla extends so far forward that the needle introduced at the point of selection impinges on it. In this case the puncture must be made further forward, consequently lower, as the lower border of the zygoma here turns downward, and naturally this necessitates directing the needle at quite a different angle. Another uncertainty, or perhaps one should say difficulty, encountered is a very narrow or very irregular pterygomaxillary fossa apparently leaving a mere chink for the passage of the instrument. Needless to say, the amount of adipose tissue covering the bone varies between wide limits, and while its thickness may be fairly well estimated by causing the needle to strike the edge of the zygoma and measuring its depth by the centimeter gradations on the instrument, it introduces another uncertainty into the accuracy of the operation. When the injection is done without an anesthetic (as is nearly always the case) some patients move the head or the jaw or make grimaces, all of which tend to deflect the needle. If an anesthetic is used the operator is denied the assistance of the patient's sensations.

In the light of the foregoing it is obvious that one never can be sure of placing his solution just where he wants it. The author asserts he has certainly missed the nerve oftener than he has struck it. Even in the same patient, having once attained the nerve with accuracy, he is never sure of doing it again. The inferior branch seems to be easier to reach than the middle one, but he has found that in most cases it is better to make the puncture a little further back than the point advised by Lévy and Baudouin. Fortunately, it is not necessary to get the alcohol into the nerve sheath, though, of course, this is desirable.

The difficulties are not great. Given a reasonably accurate knowledge of the anatomy of the parts concerned, a good idea of their relative topography, a fairly good eye or power of visualization, and the proper instrument, the writer thinks any physician can do this little operation. The real difficulty is that of accuracy, the difficulty of striking the nerve.

Doubtless all the dangers are not yet known. This must be true of any new operation. The known dangers are few. The author has not heard of the occurrence of infection. It goes without saying that the ordinary means must be employed to insure clean instruments, clean hands, a clean surface, and a clean solution. With a mere puncture and the injection of a 75-per-cent alcoholic liquid, the risk of infection is minimal. Certainly it cannot be said to be impossible, and an abscess at either of the foramina in question would be a real danger.

The danger of serious hemorrhage is reduced by the blunt point of the stylet. It will be remembered that the middle meningeal artery passes through the foramen spinosum very close to the foramen ovale and might easily be reached by the needle. Assuming that the instrument were pressed squarely against it close to the bone, it is possible it might be lacerated, but the writer has not heard of this accident occurring. Anomalous distribution aside, no other large artery lies in the course of the injection, and he thinks serious hemorrhage would scarcely occur from a vein unless it were a very large one.

The intraorbital injection for the first division he considers hazardous on account of the proximity of the motor nerves to the eye muscles. Even the optic nerve is not far away, and as the alcohol diffuses to some extent this nerve might be involved. Just how real these supposititious dangers are he does not know. His single orbital injection did no damage.

Lévy and Baudouin in their paper called attention to the danger of causing paralysis of the sixth nerve. They had met with this complication twice. In a later paper they said this paralysis might be quite transient or last for several months, and attributed it to passage of the alcohol into the cranial cavity through the foramen lacerum posterius. This occurred, of course, only in injection for the inferior branch, and, they said, only when the needle was introduced too far.

They also note the possibility, in operation for the middle branch, of introducing the injection into the orbit, and this the author asserts he is quite sure he has done once. Inspection of a skull will show how easily it may happen. The patient on whom the author inflicted this inaccuracy was one of those with a coronoid process reaching far forward, necessitating puncture further forward and much lower than usual. As he was injecting the fluid with some force (to promote its diffusion) the resistance suddenly gave way; the patient exclaimed, "What a strange sensation in my eye!" and the remainder of the fluid went rapidly in. Another time, the author states, he would stop the injection at once. The accident had no serious results, but an enormous edema of the upper lid developed with incredible rapidity. The patient's eye was closed for several days, and it was several weeks before all trace of the swelling disappeared.

Inspection of a skull also will show how easy it would be to pass the instrument into the roof of the pharynx or posterior naris, but this accident would be unpleasant rather than dangerous.

Necrosis, such as has occurred from the injection of osmic acid, scarcely needs consideration.

Unpleasant effects and complications are, in the experience of the author, very few. First, a few words concerning the pain of the operation. It is not excessive. One patient, hypersensitive and made timid by years of suffering, complained greatly, and after the second or third injection asked for gas, which was given her for subsequent operations. This is the only case in which the author has used an anesthetic. As might be expected, some patients are more sensitive than others. Sometimes there is no complaint at all. Subsequent injections are, on the whole, less painful than the first. The greatest pain is caused by the stylet striking or scraping bone at the base of the skull and by its impinging on the nerve. The injection of the alcohol itself is apt to cause sharp pain for a moment, especially if forced in with considerable pressure. This soon subsides.

A considerable proportion of the author's injections have been made in the office, and after a few minutes the patients have been able to go about their business. Occasionally there has been what seemed to be mild emotional shock. There can be no doubt that the sensation of an instrument penetrating to the base of the skull is anything but pleasant, and for a timid or sensitive person it may be rather terrifying. Real shock or any effect on pulse or vasomotor system he has not seen.

Allusion has already been made to diffuse headache as a result of the injection. As a rule it is transient and not severe. After injection of the inferior maxillary there is apt to be, for two or three days, a little soreness and stiffness about the articulation of the lower jaw. Injection of the middle or inferior branch causes slight swelling of the face, and the one intraorbital injection he has made caused considerable edematous swelling of eyelids and conjunctiva with ecchymosis like an ordinary "black eye."

When the needle attains the nerve the patient feels pain in the area of its distribution, and immediately after the injection this area has a swollen, stiff feeling. Occasionally, especially in the tongue, there is a feeling of soreness or burning. When the injection has been very successful, the area of distribution is relatively analgesic. These are trifling discomforts of which patients make no complaint.

Aside from the distressing emesis in one case, due, the author believes, to the morphine, no patient has vomited.

THE CORRECTION OF CERTAIN FORMS OF "SADDLE-NOSE."

FREEMAN (*Annals of Surgery*, August, 1907) after trying both paraffin and metal supports is convinced of the superiority of the latter, provided they are properly inserted. The plates are indicated in cases in which the deformity is so great that in order to correct it paraffin would have to be injected under considerable pressure, and yet not so great as to prevent sufficient stretching of the skin to permit the insertion of a plate. Very bad cases in which the skin is bound down by scar tissue must be treated by plastic operations, if it is thought best to do anything with them at all.

The celluloid plate is preferable to the metal one. Its length should be carefully determined, so that its upper end will rest upon the bone above, while its lower end is supported by the firm tissues of the extremity of the nose. The corners and edges should be well rounded and not too sharp, and it should be perforated with as many small holes as possible without weakening it too much, in order to permit of easy and thorough incorporation within the tissues. It must be curved slightly from side to side and wide enough to properly round out the bridge of the nose. It must not be unnecessarily thick, but it must be heavy enough to keep its shape under all ordinary conditions.

Freeman makes a short incision across the root of the nose between the eyes. Through this the skin is undermined along the bridge of the nose to the tip, and also well down the sides should it require much stretching. This is easily accomplished, and almost bloodlessly, by the use of a pair of blunt scissors, curved on the flat, the blades of which are opened and closed as they are pushed forward. When the saddle is pronounced, the skin can be stretched by inserting under it the point of an ordinary blunt, curved sound, with the convexity resting upon the forehead in order to obtain leverage. After the pocket beneath the skin has been prepared it will be found that the convexity of the nose will necessitate the insertion of the plate at such an angle that its end will catch in the tissues, thus preventing it from sliding into position. In order to obviate this, the tip of the nose should be perforated with the point of a large darning-needle. The needle should then be reversed and its blunt end pushed upward subcutaneously until it passes out through the incision. On top of this needle, as a guide, the plate may easily be slid into place. The wound is then closed with a subcuticular suture, a little cotton, and collodion. There is no tendency to gape.

Freeman states that he has operated on one case of saddle-nose resulting from specific disease in which the deformity was too great to be overcome by the injection of paraffin. Primary union occurred, and the result remained satisfactory for about eight months; but the edges and corners of the plate being rough and sharp, it finally perforated the nasal cavity and had to be removed. This was the fault of the plate and not the method, and could readily be avoided in the future.

THE TECHNIQUE OF DIRECT TRANSFUSION OF BLOOD.

CRILE (*Annals of Surgery*, vol. xlvi, No. 3) describes the technique of direct transfusion of blood as based upon 225 experiments on animals and 32 clinical cases.

In the clinical transfusions the radial artery of the donor and the proximal end of any superficial vein of the arm of the recipient are utilized. The radial artery is chosen because it is easily isolated and may be readily adjusted to the position of the vein of the recipient. Unless contraindicated the donor and the recipient are each given a hypodermic injection of morphine twenty minutes before the transfusion. Before they enter the operating-room, after their arms are prepared, and for the purpose of minimizing the psychic factor, a nurse places over their eyes a wet towel with the diverting explanation that the eyes must be protected from the bright light to prevent headache.

The donor is placed upon an operating

table of the Trendelenburg type, so that should he faint the head may be readily lowered. The recipient is also placed upon an operating table with his head in the opposite direction from the donor. By the use of an infiltration anesthesia of 0.1-per-cent solution of cocaine, about 3 centimeters of the radial artery is exposed, and the smaller branches tied with very fine silk; a "Crile" clamp is applied to the proximal end of the artery and the distal end is ligated; the artery is then divided; the adventitia is pulled over the free end as far as possible and closely snipped off; a moist saline sponge now covers this field. Three or four centimeters of a superficial vein of the recipient is then likewise freed, the distal part ligated, and the proximal closed with a "Crile" clamp; the distal part is divided with scissors, the adventitia drawn out as far as possible and closely snipped off; the vessels are then inspected, and a cannula whose bore is larger than the actual tissue thickness of either vein or artery is selected. The vein may then be pushed through this tube, after which the freed end is turned back like a cuff and snugly tied in the second groove. During this time the handle of the cannula is steadied and manipulated by means of a forceps. If the artery is small or atheromatous, or if it is contracted for any reason, its lumen may be dilated by means of a mosquito hemostat, pushed into the lumen and gradually opened. The artery is then drawn over the vein and is snugly tied with a small linen ligature in the first groove. This completes the anastomosis.

The clamp is then removed from the vein, afterward gradually from the artery, when the blood stream will be seen to pass from the artery across to the vein, dilating the latter. The exposure and manipulation of the vessels, especially the artery, causes sharp retraction, which may be so marked as to obliterate its lumen. The constant application of warm saline solution and protection from the air will help materially in bringing about relaxation, and, hence, a larger stream of blood. The pulse wave may be palpated in the vein. It is best to introduce the blood very slowly, carefully watching the result.

The author has reached the following conclusions: That the vascular systems of two individuals may be united so that intima comes in contact only with intima; that this may be accomplished by the Carrel suture or by a special anastomosis tube, which is the method of choice; that blood may be transferred without clotting; that the use of the radial artery of the donor and any superficial vein of the recipient yields the best results; that the operation may be done painlessly; that the blood lost by the donor is regained in from four to five days; that the amount transferred is under the immediate control of the operator; and that the rate of transference should be carefully gauged because of the risk of overcharging the pulmonary circulation.

ARTERIOTOMY FOR THROMBOSIS AND EMBOLISM.

STEWART (*Annals of Surgery,* vol. xlvi, No. 3) reports two cases upon which arteriotomy was performed. The first was a man aged sixty years, who had been subjected to compression over the lower portion of the abdomen and the upper portion of the thigh. A few hours later the patient began to complain of severe pain in the popliteal space, radiating down the leg to the foot and toes, and pulsation was absent in the arteries of the lower part of the limb. The femoral artery could not be examined on account of the swelling. In the first place the popliteal artery was opened by a small longitudinal incision, but no clot was found; then an incision was made over the femoral artery from just above Poupart's ligament downward and the artery opened. A black, firmly adherent clot was found and removed and the artery closed. In a short time, however, pulsation again ceased in the distal portion of the artery, and the stitches were removed and a newly formed clot turned out. A clot again formed, and the artery was then divided and an end-to-end anastomosis done. The circulation was not restored, and the leg

was amputated ten days later. The patient finally recovered.

The second case was a man, aged sixty years, who developed signs of arterial obstruction at the bifurcation of the femoral artery. On opening the artery at this point a thrombus was discovered and removed. The vessel was closed with continuous through-and-through suture of silk, and over this a second layer uniting the outer coat was placed. The pulsation returned in the popliteal but not in the tibial vessels, but gradually grew weaker and disappeared on the eighth day. A short time afterward gangrene developed, and it was necessary to amputate the leg below the tubercle of the tibia.

The author concludes that this operation may be readily performed without danger of secondary hemorrhage. It is particularly indicated when the intima is smooth, and to be of value must be performed as soon as possible after the arterial obstruction develops. Even though the vessel again becomes obstructed with clot, this may form slowly and give the collateral vessels an opportunity to dilate, thus saving at least a portion of the limb.

AN EXPERIMENTAL STUDY OF THE SUTURE OF BLOOD-VESSELS AND THE IMPLANTATION AND TRANSPLANTATION OF VESSELS AND ORGANS.

WATTS (*Annals of Surgery,* vol. xlvi, No. 3) gives a history of the suture of blood-vessels, implantation and transplantation of vessels and organs, and details a number of experiments performed by him on dogs. The vessels were clamped with small spring clamps whose blades were armed with rubber. They were then divided and freed from their loose connective tissue. The suturing was done by means of very fine straight needles and fine China silk, the thread being greased with vaselin. The vessels were kept from drying by the application of normal salt solution or sterile vaselin. The suturing was done according to Sarrel's method. The tissues over the vessels were then approximated with fine silk sutures and the skin wound was closed with a subcuticular suture of the same material. The wounds were dressed with silver foil, and, when the operation was on the neck, a crinoline bandage was applied. The common carotid artery was sutured thirteen times. All the sutures were successful, and in no case was there the slightest evidence of thrombus formation. The femoral artery was sutured twice, thrombosis occurring both times as the result of wound infection. The external jugular vein was also sutured thirteen times, ten of the sutures being successful.

Microscopic examination of the arterial sutures at periods varying from twenty-eight to eighty-two days after the operation showed that there was a gradual restoration of the artery at the site of the suture, and that, with the exception of the inner elastic membrane, all the elements of the vessel wall were properly regenerated. The common carotid artery was sutured to the external jugular vein four times, all being successful. In these cases the walls of the vein became thickened, and in some cases showed changes similar to those found in arteriosclerosis. The central end of the femoral artery was sutured to the distal end of the femoral vein four times. One case was successful; in the others thrombosis occurred. In four animals a lateral anastomosis of the femoral artery and veins was made. In all cases the immediate result was quite satisfactory. In only one of the animals, however, did the anastomosis remain patent. Excision and implantation of a section of the vein into an artery was tried twice. In one instance a section of the external jugular vein was transplanted into the common carotid artery with perfect success. Transplantation of the thyroid gland was done six times, but without success. The results show that completely divided vessels can be sutured with almost uniform success when aseptic technique is good. The intima can be included in the suture with impunity, the application of the suture being thus greatly facilitated. Infection is by far the most important factor in producing thrombosis after vascular sutures.

There may be minor grades of infection which, although allowing per primam healing of the wound, may be sufficient to produce thrombosis of the sutured vessels.

DRAINING CIRCUMSCRIBED ABSCESSES OF THE PANCREAS.

BREWER (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 3, 1907) says that during the past year he has on two occasions been obliged to open and drain a circumscribed collection of pus in the pancreas. In one instance the abscess was located in the head of the organ. In another it was situated about its middle. The following method of drainage was employed:

A median incision, about 10 centimeters in length, was made through the left rectus muscle, and the abdomen opened. The transverse colon with its mesentery was turned upward, and the body of the pancreas palpated through the transverse mesocolon. As soon as the indurated area was reached, the intestines were walled off by gauze pads and an exploring needle plunged through the inferior layer of the mesocolon into the center of the mass. A syringeful of creamy pus was withdrawn. The needle-opening was cautiously enlarged by introducing a closed pair of thin-bladed dressing forceps and withdrawing them partly opened. About two ounces of pus was evacuated and the cavity syringed out with peroxide of hydrogen. A long, rubber drainage tube, 15 millimeters in diameter, was then introduced into the small opening and tightly packed about with a thin strip of folded gauze tape to prevent leakage of the pus along the side of the tube. The tube and gauze packing were then secured in place by a single stitch of plain catgut. The distal extremity of the gauze tape and the long drainage-tube were then brought out at the lower angle of the wound, leaving ample space for the transverse colon and small intestines to fall into their accustomed places and form adhesions around the 25 or 30 centimeters of the drainage-tube, which passed from the abscess to the lower angle of the cutaneous wound. After cleansing the contaminated area of peritoneum the external wound was tightly closed around the tube and tape by layer suture and a sterile dressing applied.

Practically no reaction followed the operation. The drainage was free from the first forty-eight hours, after which it diminished rapidly in amount. The tube and tape were allowed to remain in place for eight days, when they were easily withdrawn. The abdominal wound closed rapidly and the patient made an uninterrupted recovery.

In the second case the technique was exactly the same, except that the pancreas was exposed by division of the gastrocolic omentum, and the tube was much shorter and passed directly from the abscess cavity to the external wound, while in the first case it described a gradual curve to allow the transverse colon to fall into place. The recovery in this second case was also prompt and uneventful.

THE TUBERCULO-OPSONIC INDEX AND TREATMENT BY TUBERCULIN.

JEANS and SELLARDS (*Bulletin of the Johns Hopkins Hospital*, vol. xviii, Nos. 195-196) in discussing the tuberculo-opsonic index and the treatment of tuberculosis by tuberculin say that theoretically the most suitable cases for treatment with tuberculin would seem to be those of localized tuberculosis in which the presence of secondary infection is unlikely or very improbable. Such localizations are found in the bones, glands, and joints. While in tuberculosis of the bladder and in lupus the rôle of secondary infection cannot be excluded, it seems to be of little importance. Pulmonary tuberculosis is not suitable to the employment of the specific treatment, because here secondary infection probably plays a considerable part.

Nine cases are reported, of which two were tuberculosis of the glands of the neck and two tuberculosis of the hip, and one each of tuberculosis of the head of the humerus, the ankle, the bladder; one was a case of lupus vulgaris. The results in these

cases were such as to justify further continuation of the methods of treatment. In none of the cases was the result miraculous, but in certain of them there seemed to be a very definite relationship between the treatment and the improvement in the patient's condition. It is important that in addition to the treatment hygienic measures should be carried out.

A SIMPLE METHOD OF REMOVING STONES FROM THE LOWER URETER.

BARTLETT (*Surgery, Gynecology, and Obstetrics,* vol. v, No. 3, 1907) describes the procedure which he has developed for the removal of stones from the lower ureter, by means of which it is easy to find and extract stones of moderate size lying anywhere in the pelvic portion of the tube.

An incision is made parallel to the external border of the rectus muscle extending from the semilunar fold of Douglas to the pubis. This goes down to the peritoneum, which is not opened but gently pushed toward the middle line, the hand of the operator keeping as close as possible to this membrane, which will drag the ureter into the wound, so intimate is the attachment between them. It is not necessary to use a hemostatic forceps or retractor in following the line of cleavage, which leads straight to the ureter, and in this way exposes it from the brim of the pelvis to the bladder.

With the tube between the thumb and first finger of the left hand it is a simple matter to follow its entire pelvic course, and thus locate a stone embedded in it. This has been accomplished in a patient who was so fat that no portion of the tube lying at the bottom of a deep wound could at any time be seen.

The stone is tightly held between the thumb and first finger of the left hand; the wall of the ureter, which is stretched over the same, is nicked with the point of a sharp knife, and the stone squeezed through the tiny opening, which stretches to accommodate its passage. The first time this is done the operator will be astonished at the ease with which the stone finds its way out of its resting-place into the grasp of the thumb and finger, it not being necessary to introduce the other hand or any grasping instrument into the wound.

No stitches are taken in the ureter—in fact the tiny wound is never seen at all. A fine cigarette drain is carried down to the vicinity and the abdomen closed except at the lower angle.

The odor of urine was never detected on the dressings of any one of four patients operated upon, though the stones removed varied in size from a number-six shot to the smallest marble. The drain has always been removed on the fifth or sixth day; the healing has been complete a few days later; and all of the patients have been up and perfectly well within two weeks.

This method makes possible three most desirable objects, viz., the use of a small abdominal incision, since the work is performed by the aid of touch alone; a minimum of injury to the ureter, since the stone is squeezed through an opening smaller than itself; a short, simple operation, since no closure of the tiny ureteral wound is required.

THE TREATMENT OF OPHTHALMIA NEONATORUM.

CRAGIN (*Surgery, Gynecology, and Obstetrics,* vol. v, No. 2) states, in reference to the prophylactic treatment of ophthalmia neonatorum, that in his experience a number of cases of this disease will inevitably occur no matter what treatment is employed. In five methods of prophylactic treatment the smallest number of cases of ophthalmia in 1000 confinements has been 17, the largest 34. The objects in prophylactic treatment are to reduce the number of cases and to permit the disease to do as little damage as possible when it does occur. The best way to prevent the disease is, immediately after birth, to cleanse the eye from the discharges with a bland solution and then instil into it a disinfecting solution.

The method of cleansing the eye is to

flush it from the inner to the outer canthus with boric acid solution by means of a medicine dropper, the outer surface of the lids being then bathed in the same direction with the same solution.

It is commonly conceded that some salt of silver is best adapted for instillation. The author has used five solutions, with the following results:

Series I. In 1000 confinements 2-percent nitrate of silver solution: Cases of ophthalmia 18; eyes lost none; opacities none.

Series II. In 1000 confinements 1-percent nitrate of silver solution: Cases of ophthalmia 34; eyes lost 1; opacities none.

Series III. In 2000 confinements 5-percent protargol solution: Cases of ophthalmia 53; average per thousand 26 plus; eyes lost 1; opacities 1.

Series IV. In 2000 confinements 10-percent argyrol solution: Cases of ophthalmia 34; average per thousand 17; eyes lost 1; opacities 2.

Series V. In 2000 confinements 20-percent argyrol solution: Cases of ophthalmia 43; average per thousand 21 plus; eyes lost none; opacities none.

In the curative treatment of ophthalmia neonatorum the writer has found argyrol of great value. His method consists of frequent irrigations of the eye with boric acid solutions, cold compresses, and instillations of argyrol every two to four hours. It seems wise in severe cases which resist the treatment by argyrol to make occasional use of nitrate of silver 1 to 2 per cent. The use of all silver compounds, even argyrol, may be continued too long, and discontinuing the silver solution and using only boric acid solution may bring about a speedy recovery.

SCOPOLAMINE-MORPHINE ANESTHESIA IN OBSTETRICS.

NEWELL (*Surgery, Gynecology, and Obstetrics,* vol. v, No. 2) uses as the basis of his report an additional series of 123 obstetrical cases in which scopolamine-morphine anesthesia has been used in private practice and at the Boston Lying-in Hospital. The routine of administration carried out is as follows: A solution containing 1/10 grain of Merck's scopolamine hydrobromide and 2½ grains of sulphate of morphine was prepared at least every fourth day—oftener if a sufficient number of patients were treated to render it necessary. As soon as labor became active, practically when contractions occurred at five-minute intervals, an initial dose, containing 1/150 grain of scopolamine and 1/6 grain of morphine, was given hypodermically. This was repeated at the end of from one to two hours, unless the patient showed marked reaction to the initial dose. In case marked reaction developed, the dose was not repeated until the effects of the drug began to disappear. In no case was the dose repeated after the cervix became two-thirds dilated, it being considered best to avoid the possibility of allowing the action of the drug to continue after delivery had taken place.

In reference to the results the author states that of the patients who received one or more doses of scopolamine-morphine, 112 out of 123 reacted favorably to the drug, and since in four of those who showed no reaction an old solution had been used, to test its efficiency, it seems fair to assume that the effect of the drug can be definitely counted on except in occasional patients.

Of the 123 cases in which the effect of the anesthetic on the pain suffered during labor was carefully charted, it was found that 17 patients stated that labor was practically painless; 70 suffered only slight discomfort; 19 dozed during the intervals, but complained of pain, although not excessively, when the uterine contractions occurred, and may well be included under the patients who experienced marked relief. Six patients apparently experienced no relief from pain, but slept during the intervals between contractions. Eleven of the patients showed no effect. In other words, in 112 out of 123 patients labor was made distinctly easier by the use of the drug, and in four of the failures an old solution was employed.

In those patients who reacted markedly

to the drug there was no clear recollection of pain suffered, as the perception of pain was practically abolished. In those patients in whom the pain was complained of during labor recollection of the pain suffered was more or less clouded, except among those on whom the drug was reported as having no effect.

Labor seems to have been definitely shortened in the majority of cases. Since, however, there was no means, except the patient's statement, of knowing when labor really began it was impossible to tell how much effect on the length of labor was really produced. In 71 primiparæ the average length of labor was fifteen hours, but since no patients were admitted to the hospital until labor was actually in progress, the true length of active labor could not be learned.

THE OPERATIVE TREATMENT OF SUBDELTOID BURSITIS.

BAER (*Bulletin of the Johns Hopkins Hospital,* vol. xviii, Nos. 195-196) reports four cases of subdeltoid bursitis operated upon by him with perfect results in three of the cases, and a result as good as could be expected in the fourth case, considering that it was complicated by fracture of the greater tuberosity of the humerus. In acute cases the treatment consists in the reduction of the swelling of the bursa and relief of pain by the application of ice-bags or the use of counter-irritants such as the Paquelin cautery or hot air. If the inflammation is of a rheumatic origin the salicylates or aspirin are of value. The arm should be put at rest to prevent traumatism of the bursa. In the more chronic cases the treatment should consist of complete excision of the bursa, such as carried out in the cases reported.

An incision of small extent should be made parallel to the long axis of the humerus midway between the coracoid and acromial processes. The fibers of the deltoid should be separated, and the subdeltoid bursa thus uncovered. This should be dissected out and removed in its entirety. If the walls of the bursa are at all thickened this is easily done, but if the walls are normal the sac is so thin that one is liable to overlook it. After the sac has been excised the arm should be put through all its motions, which one can then do without fear of untoward results. The deltoid muscle is brought together with fine black silk, and the skin is sewn with an intracutaneous suture of silver. The arm should then be put up in a Velpeau bandage and dressed on the seventh day. The arm is then entirely freed and the patient allowed to use it at will.

The advantages which the operative treatment affords are as follows: There is no fear of damage from tearing the adhesions, or rupturing the vessels, for all adhesions are removed *in situ* before the manipulations are commenced. The bursal walls cannot readhere, for they have been removed. The position at which the arm is placed at the side of the patient is most comfortable. The patient is saved a long course of passive motions and massage, which is very trying, and can return to work with full motion and painless use of the arm in from two to three weeks.

THE IDEAL LIGATURE.

WHITING (*New York Medical Journal,* vol. lxxxvi, No. 11) gives a history of the use of the ligature and details experiments which he has made in the preparation of catgut.

His experiments show that the gut prepared according to his method is not merely antiseptic gut, but has germicidal powers. The chemical used in this method is silver iodide.

Catgut treated before it is twisted is much stronger than catgut sterilized after it has been made into a solid cord or string.

It is possible to thoroughly impregnate the untwisted gut with a chemical which will become a component part of the catgut when twisted.

Silver iodide gut will remain sterile as long as it is retained in the living tissues, and will possess germicidal powers until it has been absorbed or replaced by living

cells, the fluids of the body breaking up the silver iodide into silver, iodine, and various compounds of these chemicals.

In conclusion Whiting says that it is possible and practicable to produce catgut that is absolutely free from germ life, and that has antiseptic and germicidal powers, by treating the gut with various chemicals before it is twisted into a solid string or cord.

THE PERMANENCE OF THE RESULTS OF OPERATIVE TREATMENT OF LUXATION OF THE INTERARTICULAR CARTILAGES OF THE KNEE-JOINT.

MARTINA (*Deutsche Zeitschrift für Chirurgie,* Bd. lxxxviii, H. 4-6) collects from the literature the results of operation for luxation of the semilunar cartilages of the knee-joint, and reports two cases of his own. From these he draws conclusions.

In persons who had a sedentary occupation or were able to take good care of themselves complete cure occurred. The slight atrophy of the thigh muscles which persisted did not prejudice the results. It was different if the limb which had been operated upon was used to an unusual degree. Almost invariably defects were reëstablished in those who followed their previous occupation, as that of laborer or soldier, or who, because of some uncontrolled impulse, as in hunting or games, placed great strain upon their lower limbs. In general the results of operative treatment were dependent chiefly upon the use to which the injured member was put. Power to do military duty was lost, while ability to engage in civil pursuits was retained. In spite of this the operation was justified because it lessened considerably the degree of disability, produced changes in the joint which favored restitution, and gave again to the affected person a limb useful for moderate work.

In all cases one should guard himself against drawing a hasty conclusion in reference to the full restoration of the function of the joint. Often one is strengthened in an optimistic view by patients who are impatient to resume their work and who express themselves as being very well satisfied with the power they have of using the limb. Soon after resuming their occupation, or perhaps not until months later, defects come on, with increasing demands upon the injured joint. At first these are slight, but later become so marked that the person, on account of frequent relapses, can follow his occupation to only a limited extent.

If one compares the results of operative treatment with those of conservative treatment, the former is to be unqualifiedly preferred to the latter on the grounds of adaptability and the certainty of the result; nevertheless the operation is not capable of entirely and permanently removing all previously existing disturbances in the mechanism of the joint. These will, however, remain latent if only moderate demands are made upon the joint. Otherwise they will become serious and bring on more or less outspoken invalidism. This must be taken into consideration in making a prognosis. An ideally functionating joint is, on anatomical grounds, not to be expected.

DERANGEMENT OF THE KNEE-JOINT, WITH ESPECIAL REFERENCE TO INJURIES OF THE SEMILUNAR CARTILAGES.

KÖNIG (*Deutsche Zeitschrift für Chirurgie,* Bd. lxxxviii, H. 4-6) says that in all joints of the human body severe disturbances occur as a result of violence without the production of a gross lesion, such as dislocation or fracture. These disorders are comparable to the impairment of the mechanism of a clock by the breaking of a wheel or the presence of a foreign body in the works. No joint is so favored on account of its size and anatomical form, nor, on the other hand, so exposed to traumatic disturbances on account of the demands made upon its strength, as is the knee-joint. As the German language has no suitable word to describe the condition referred to, the author adopts the French word "dérangement," and confines its meaning to those disturbances, appearing as a result of violence, having an anatomically demon-

strable basis in the sense of the foreign body in the clock, and does not include fracture or dislocation, or nervous, muscular, or other conditions lying outside of the joint. Such injuries are brought about by direct violence upon the knee through a fall, jolt, blow, etc. The joint is injured by pressure of the articular surfaces against each other, as by a jump or fall upon the feet with the knee-joint extended; or by excess of motion in the normal direction, as in bending or extending the leg; or through inward or outward torsion. The lesions which are evoked in this way are the following: Small pieces of the cartilage-encrusted articular ends of the bone are loosened and pushed permanently or temporarily into abnormal positions in the joint; the subserous fat-cushion, especially at the sides of the ligamentum patellæ or the anterior part of the thigh, is lacerated, and larger or smaller fat tumors, thus formed, interpose themselves between the joint ends of the bones. In rare cases strands or projections form in the joint cavity through tearing or destruction of the capsule or ligaments. Very commonly the interarticular cartilages, through injury, become disturbing foreign bodies.

The author has done altogether fourteen operations on account of the symptoms and physical signs of *dérangement*. The inner meniscus is injured oftener than the outer, in the ratio of 9 to 5.

There appeared, as a rule, in these injuries to the joint both local and general joint swelling. The general swelling was due to effusion into the joint; the local swelling in the region of the joint cleft was due to the displaced cartilage. There was also tenderness to pressure. Often the deformed cartilage could be made to emerge from the joint cleft by a definite motion of the limb, as bending. As a rule there was creaking in the joint on motion, and in one case motion of the joint resulted in transitory fixation. Sometimes a subcutaneous blood effusion showed itself after several days. Pain was usually marked, and some cases were subject to sharp attacks of pain of a neuralgic character. There was defective flexion and extension and atrophy of the extensor muscles.

The following case record is given as a type: A printer, aged twenty-one, fell two years previously, while at gymnastic exercise, upon his heels with the limbs extended. In spite of the pain he continued the performance. The knee was swollen and was treated by massage for six months. One and a half years later he slipped and twisted the injured knee inward. On account of the aggravation of the condition thus caused he went to the hospital, where he remained two and a half weeks, but a short time after leaving the hospital returned on account of creaking in the knee. He was a strong, healthy man, and walked well, but somewhat cautiously; motion in right knee normal; knee somewhat thicker, especially between the patella and the internal lateral ligament, where there was a broad, flat prominence, in form resembling the meniscus. This was painful on motion and palpation, and there was creaking in the joint on motion. The movement of the joint was painful.

Operation: Oblique incision over the prominence; splitting of the capsule. The cartilage, which was dislocated outward and forward, was seized with forceps and 3 centimeters of the free part removed. This was found to be thickened and its surface covered with flat protuberances and scars; otherwise the joint was sound. The part removed comprised about half the internal meniscus. The wound in the capsule was sutured with catgut and the limb put in a Volkmann splint. Twenty-four days later after an aseptic course the patient was discharged cured and walking well.

In the treatment as well as in the consideration of the anatomical and clinical findings it is desirable to separate the recent from the chronic injuries, for the former are not as a rule treated by operation, although they will probably require operation if the contusion of the cartilage is severe or there is well-marked detachment from the tibia. If this is not the case, then in recent injuries dependence must be placed upon rest of the limb so that healing

may not be disturbed by movements of the joint. Since the blood effusion disappears more quickly by massage it is perhaps wiser not to put on a plaster cast at once; or, if this is done, the cast should be split so that the limb may be taken out for careful massage and light motion. This treatment must be kept up for about six weeks, and for a time after this only slight motion should be permitted. In recent cases, when the dislocation of the cartilage is marked one should first try to replace it by simple finger pressure. If this does not succeed the leg should be pulled upon and the joint moved in various directions. If these efforts do not succeed one must consider immediate operation. It may be sufficient at first to replace the cartilage, if it is not severely lacerated, and stitch it in place by sutures passed through the capsule close to the femur and the tibia. Later, if it is seen that the result is not satisfactory, it is easy to extirpate the luxated part of the cartilage.

In the chronic cases the movements of the injured joint push the loosened portion into the joint, where it becomes hemmed in and its form changed into a ropelike structure with an uneven surface. Thus it becomes a foreign body, and not only impairs the motion of the joint but causes severe pain. These conditions can be remedied only by removal of the deformed cartilage.

In the eight cases operated upon on account of injuries to the internal meniscus no attacks of neuralgic pain returned. Only one case was entirely freed from symptoms of joint trouble. In the others there remained partial defect in motion, especially in extension, though relatively slight. Hill-, step-, and ladder-climbing were difficult in most cases. All suffered more or less pain, partly as a result of undue use of the joint, partly spontaneously, and especially in certain kinds of weather. All could use their limbs without disturbing lameness; all remained free from the sharp shooting pains which had rendered the joint temporarily or permanently powerless. One was compelled to change his occupation.

It is a matter of indifference whether part or all of the cartilage is removed. The operation is done, as a rule, upon the bloodless joint by a lateral longitudinal incision parallel to the edge of the patella. The skin and fascia are cut through and the capsule opened at the level of the meniscus. The lips of the wound are held apart by hooks, and the region of the injury is thrown into relief by pulling upon the leg and at the same time bending the knee. When the injured part has disappeared into the joint search must be made for it; this is made easier by means of a small electric speculum. The cartilage is seized by means of long, slender forceps or a hook, and the injured part removed with slender scissors curved on the flat. The case is most difficult of operation when the injury is at the posterior part of the meniscus. The wound is then sewed up, except that in most cases a small gauze drain is inserted in order to obviate the collection of blood in the joint.

LAXATIVES AFTER LAPAROTOMY.

Byford (*Surgery, Gynecology, and Obstetrics,* vol. v, No. 2) states that he gives laxatives after laparotomy as soon as the patient can take them, in order to restore through-and-through peristalsis, and continues them later as necessary in order to secure daily evacuation of the bowels. The plan which the author finds most satisfactory is to give two drachms of cascara two hours before operation and an ounce of Hunyadi water every hour after the patient wakes from the anesthetic until the bowels move and flatus is passed freely. If there is no voluntary movement within twelve hours after the operation, a high enema of 3 ounces of glycerin and 3 ounces of water is administered every two or three hours according to emergency.

If Hunyadi is not well borne, a teaspoonful of granular effervescing citrate of magnesia or two ounces of the liquid citrate are given. Postoperative water famine is provided against by making free water-drinking a part of the preparatory treatment. If flatus does not pass freely at the

end of twenty-four hours, or if there is no evidence of active peristalsis, an ounce of spirit of turpentine is added to the enema. Neither bowel movements nor the expulsion of gas which result from enemata are taken as proof of through-and-through peristalsis, but the laxatives and enemas are continued until flatus passes freely between enemas. After this 2 to 3 ounces of Hunyadi are given night and morning until it is no longer needed to create daily evacuations. If there is much postoperative pain an ice-bag should be applied to the abdomen and an enema containing about 30 grains of chloral given, which will usually alleviate the trouble without inhibiting peristalsis. Opiates are avoided.

PROPHYLAXIS OF VENEREAL DISEASES FROM THE STANDPOINT OF THE GYNECOLOGIST.

CLEVELAND (*Surgery, Gynecology, and Obstetrics,* vol. v, No. 2), in discussing the subject of prophylaxis of venereal disease from the view-point of the gynecologist, states that all general hospitals must be persuaded to receive acute cases of venereal disease and greater dispensary facilities must be established. The conclusion that at present legislation would be of little avail seems to be fairly general. The regulation of prostitution has not been attempted in this country because of the popular opposition to the licensing of such practices, and, moreover, its regulation in those countries in which this has been attempted has not succeeded, chiefly because the so-called private or clandestine prostitutes outnumber the public a hundred to one. Also, men who are spreading the disease to a greater extent than the prostitutes cannot be reached at all.

It is not expected that syphilis and gonorrhea can be entirely eliminated, but they can be checked and held in abeyance; marriage can be protected and blindness from gonorrheal infection can be eradicated. This is to be accomplished chiefly by education of the public. It is considered most important that all medical schools should pay greater attention to instruction in venereal diseases and their consequences. Colleges, seminaries, and other schools should have in their curricula courses upon sexual physiology and hygiene. Teaching through the medium of university settlements, church settlements and various charity organizations can do a vast amount of good. Although boards of health are entirely inactive concerning this question, they have a vast amount of machinery which could be made available for help. They could be of the greatest aid in distributing information in the way of literature upon this subject. The medical secret prevents the reporting of venereal diseases, but physicians could be required to report these diseases with dates, without giving the names of the patients, and the board of health could tabulate and publish them. This would do away with all objection upon the part of the public, would be of immense advantage to scientific research, and of the greatest help in determining the approximate prevalence of these diseases.

Parents should begin early in the home instruction of their children in reference to sexual matters. If this instruction is not carried out, children grow up with erroneous ideas regarding the sexual apparatus, the sensual predominating. The fundamental facts of the physiology and pathology of the generative organs is all that the parent needs to know to bring up the child safely. The chief sources of prostitution are the laboring classes, factories and shops supplying the largest quota. The young women of these classes should be instructed in these matters if they are to protect themselves and preserve their purity. There should not be two standards of morality, one for men and one for women. It should be insisted that there are no facts to sustain the claim that sexual indulgence is a necessity for men any more than it is for women. It would not be going too far for the parent to demand that a young man should furnish a certificate of freedom from venereal disease from a reputable physician before giving his consent to the marriage of his daughter.

THERAPEUTIC RESULTS, ESPECIALLY FROM SERUM-THERAPY IN TETANUS.

FRICKER (*Deutsche Zeitschrift für Chirurgie,* Bd. 88, H. 4-6) reviews the literature of the therapeutics of tetanus both before and after the advent of antitoxic serum, reports at length forty cases treated, and gives a summary of the results.

Of the forty cases reported, eighteen were treated prior to the introduction of serum and twenty-two with serum combined with other measures. Of the former series fourteen were males, twelve of whom died and two recovered, and four were females, all of whom died. The treatment was almost purely symptomatic. A local treatment of the wound through which the infection had occurred, with thorough cleansing, disinfection, and, in a few cases, excision, was carried out. In only two cases was the wound excised, and then insufficiently, so that there is no complete excision in this series of cases from which an inference may be drawn as to the effect of such procedure. In one case amputation was done, but only as a last resort, when the symptom-complex of virulent tetanus was already fully developed. None the less the case improved in an extraordinary manner: the trismus abated, the muscles relaxed, and the convulsive attacks almost ceased for three days. The germs, however, had in this case been concealed in the lymph glands and lymph vessels, and gave rise to a renewed production of toxin which brought on a fatal result. Notwithstanding the unfavorable termination, this extraordinary mitigation of the symptoms following the radical surgical measures speaks for the therapeutic value of such procedure.

Against the convulsions, which constitute the real danger in tetanus, chloral, opium, and morphine were used. These reduce the irritability and contraction of the muscles and counteract the sleeplessness which is so characteristic of tetanus. If, in spite of this treatment, the convulsions were strong and frequent, then chloroform narcosis was resorted to with good results. The strength of the patient was maintained by sufficient nutrition. In cases in which the throat muscles were affected nutrient enemata were given. The patients were isolated, unnecessary manipulation was avoided, and they were at no time left alone when in a convulsive attack.

Of the twenty-two cases treated by serum, together with other measures, twenty were males, of whom twelve died and eight recovered, and two were females, both of whom recovered. The treatment was both local and general. In ten cases, seven of which died and three of which got well, the wound was disinfected immediately after admission. In fourteen cases, eight of which died and six of which recovered, the site of infection was cut out and foreign bodies were removed, and at the same time serum treatment was begun. This excision was in most of these cases extended as far as practicable into the healthy tissues. It was at all events more extended and radical than in the series which were not treated with serum, and it is believed that this thorough excision played an important part in the results. As long as a residue of tetanus germs is able constantly to bring a quantity of newly formed toxin into the organism, the serum treatment will have to be of long duration even if the serum has the curative value which von Behring claims for it.

The author concedes to energetic local treatment a prime place even if he would at the same time use the serum treatment. In how far the local treatment or the serum influenced the favorable course it is difficult to decide. In none of the cases could an exceptional improvement be observed upon the introduction of the antitoxin; the symptoms abated gradually. The toxins which are already lodged in the nervous system are not at all influenced by the serum, the sole effect of the treatment being to prevent the lodgment of new masses of toxin.

Twelve cases remained uninfluenced throughout the treatment. These were mostly desperate cases and already far advanced. Besides the serum were given,

when convulsive attacks were present, narcotics, as chloral by the mouth or by enema, and morphine subcutaneously. Washing out of the body by intravenous injection of salt solution was carried out in eight cases, five of which died. In one case the patient was first bled, but in the others the salt solution was incorporated directly with the intravenous serum injection. In other cases the serum was given subcutaneously. The administration of serum was repeated from one to eleven times, depending upon the course of the disease, and on successive days, or twice on the same day. The dose was increased as the treatment progressed.

The patients were isolated and sufficient nourishment was provided, eventually by enema.

Of the total number treated without serum sixteen died, a percentage of 88.8; of those treated with serum ten died, a percentage of 45.5. In the second series there was a greater number of mild or moderately severe cases than in the first. The local treatment was in the individuals of the second series much more radical and timely.

Those who are enthusiastic over serumtherapy will not permit any strictures. The naked figures are proof enough for them. In the critical examination of the course of tetanus the naked statistics are worthless. All depends upon the individual observation. The author further states that he will continue to use the antitoxic serum because an unfavorable experience does not speak against the possibility of its advantages, but in the future as in the past he will accord to local therapy an important and leading place.

The conclusions of the author from his observation of forty cases are as follows: In determining the prognosis, besides the incubation period and the malignancy of the infection, one must take into consideration an individual disposition for the rapid and firm fastening of the toxin upon the nervous system. Difficulties in swallowing coming on early in the disease or in virulent cases are of unfavorable prognostic import. In cases with brief incubation period death often comes much later than in cases with longer incubation period. The serum injections appear to modify the result and the course, but remarkably so only when the whole or at least the principal part of the infectious material was removed operatively by excision or amputation. Therefore, in no case should local treatment at the site of infection be omitted. The serum injections have not the power to replace the narcotics in their influence. Whether operative removal of the infectious material and symptomatic treatment with narcotics alone are able to influence the course of the disease cannot be decided by the cases at hand, for in the cases treated symptomatically an excision was done in only three instances, and then insufficiently. A wandering of the bacilli of tetanus from the wound out through the lymph channels into the neighboring lymph glands appears to be no rare occurrence.

TREATMENT OF GONORRHEAL ARTHRITIS BY VACCINES.

Cole and Meakins (*Bulletin of the Johns Hopkins Hospital,* vol. xviii, Nos. 195-196) report upon the treatment of gonorrheal arthritis by means of vaccination. The technique employed in the estimation of the opsonic index was as nearly as possible that described by Wright. The strains of gonococci were derived from two sources, one from the knee-joint in a severe case of gonorrheal arthritis with effusion, and the other from a case of gonorrheal periostitis. Comparison of the two strains did not reveal any appreciable difference. It is advisable, however, to use an organism isolated from the case under treatment, but this presents such difficulties as to be at times quite impossible. The strength of each vaccine was usually six hundred million gonococci in one cubic centimeter.

In carrying out the treatment the opsonic index was first determined, and, if below normal, the first dose of vaccine was given. This was usually three hundred million gonococci. The dose of vaccine was increased gradually until one thousand mil-

lion at one dose were used. No ill effects were encountered even when twelve hundred million were used at one dose. A slight local reaction always occurred twelve to twenty-four hours after the first dose. In one case the patient suffered from forty-eight to seventy-two hours after the operation with marked pain and induration at the site of the arthritis. This occurred after subsequent injections, but the reaction diminished in severity with each subsequent dose. After the last injection no reaction occurred.

General constitutional disturbances following the injections were very rare. In only one case can this be said to have occurred. There was sudden rise of temperature with general malaise the evening after the second injection, but recovery was complete within twenty-four hours and no further general disturbance was noted. As a rule there is a sudden ascent in the opsonic index after the vaccination with a gradual descent. In some cases this was reversed.

The number of vaccinations varied from one to eight. The intervals between the injections were controlled by the opsonic index, though in most cases the intervals were from seven to ten days. In none of the cases was the negative phase at all marked, and a cumulative negative phase was never observed. Fifteen cases of gonorrheal arthritis treated by vaccination are reported in detail. The ages vary from nineteen to forty-six years. Four were females and eleven males; the duration of illness varied from two weeks to eighteen months. The time of treatment varied from nine to seventy days. The longest time was in a case which had persisted eighteen months before treatment was begun. The time required for treatment appears in a general way to be proportional to the duration of the illness. The patients as a rule returned to work at the time the treatment was discontinued.

Although the authors realize the difficulty of drawing conclusions from these cases they are of the impression that the vaccine treatment as carried out has been of distinct value and that they are justified in continuing its use. It hardly seems advisable that control of the administration of vaccine by the estimation of the opsonic index should be persisted in. The danger of cumulative negative phases is not considered a real one. The authors have omitted so far as possible all other forms of treatment, as they wished to test the vaccine alone. There is no reason, however, why vaccine treatment should not be combined with whatever other form of treatment may be considered advisable.

COAGULATION TIME OF THE BLOOD.

HINMAN and SLADEN (*Bulletin of the Johns Hopkins Hospital,* vol. xviii, Nos. 195 and 196) give a detailed report of their experiments with the various methods of testing the coagulability of the blood. Out of 251 cases tested by Boggs's modification of the Brodie-Russell method, 163 cases have coagulation times below 8 minutes, and although more than half the series are pathological cases, there are only 88 with times above 8 minutes. Ninety-seven had times of 11 minutes or above. The longest time in the series is 33 minutes. Leaving out these 37 cases the remaining 214 cases have an average time of 6 minutes and 40 seconds. Records below 7 to 8 minutes are normal, while coagulation periods passing this period are proportionately delayed. A series of cases tested by Milian's slide method shows times which correspond very closely to the Boggs method. The Milian slide method is quick, convenient, thoroughly reliable, and can be used in the laboratory or sick-room. The only apparatus needed is a clean slide and a millimeter scale. The chief objection is the exposure and the consequent evaporation. This has little effect in cases in which the time is within normal limit. For pathological cases tested it was found that in jaundice due to cholelithiasis the times ranged from 5½ to 12½ minutes, with an average of 8 minutes. In jaundice due to malignant disease the time limits were 9 to 20½ minutes; with an average of 13¼ minutes. In the primary anemias no mark-

edly delayed time was found. Many cases of aneurism were tested, but in none of them were delayed times found. By the administration of calcium salts the coagulation time in aneurism was reduced from 7½ to 3 minutes. Before calcium is given the coagulation time should be measured, and if it is found delayed calcium is indicated. The lactate is the best salt. The chloride is too irritating. A good way to give it is in suspension in simple syrup, or the powder or capsule may be used. A solution of the chloride in normal salt may be used for infusion intraperitoneally or intravenously, but subcutaneously it may cause great sloughing.

When given too long its effect wears off and the time returns to what it had been previously. In only one case was there a possibility that the calcium lengthened the coagulation time to more than it had been before it was given. Calcium can maintain the increase in coagulability only about three to five days. In order to reduce a delayed coagulation time and maintain it as such it is better to begin with a small dose, as 10 grains four times during the day. Daily determinations are made, and when the coagulation time is again becoming delayed increase the dose to 20 grains every four hours, then to 30 and 40 grains. Then three to five days are allowed to elapse without the administration of any calcium, when a new course is begun.

ADENOIDS AND ADENOID TUBERCULOSIS.

E. Hamilton White (*American Journal of the Medical Sciences,* vol. cxxxiv, No. 2) concludes a paper upon this subject with the following observations:

Primary tuberculosis occurs in a certain proportion of all cases of adenoids. From the figures of other observers and the author's this seems to be about five per cent. This is regarded as a conservative estimate.

In determining the presence of adenoid tuberculosis the histological method is the most satisfactory.

Tuberculosis does not appear to be an important factor in the production of adenoid hypertrophy.

Adenoids and tonsils are the important channels of infection in tuberculosis of the cervical glands.

In the development of pulmonary tuberculosis adenoids may sometimes be direct channels of infection, but their importance is probably more often indirect by predisposing to catarrhal inflammations of the upper respiratory tract.

APPENDICITIS COMPLICATING PUERPERIUM.

Hilton (*Surgery, Gynecology, and Obstetrics,* vol. v, No. 4) observes that a great portion of the cases of actual appendicitis have been overlooked since the whole condition is masked by the peculiar periappendicular conditions and the symptom-complex, incident to childbirth and the puerperium. He states that in all there are twenty-nine reported cases having their incipiency during the puerperium. Of these twenty-two began within ten days following full-term delivery, and one within the same interval following abortion. Six cases occurred from twenty days to eight weeks after labor. Aside from these twenty-nine cases there are a few reported as appendicitis during the puerperium that had their beginning during the parturient act. Over two-thirds, or twenty-one cases, developed during the first four days.

The prognosis of appendicitis occurring at this time seems grave. Of twenty-two cases developing within ten days following labor, ten died, a mortality of 45.5 per cent. Of the total twenty-three cases reported as developing within ten days following labor, sixteen or 70 per cent were of a suppurative or of a perforative type.

As to treatment, early surgical interference is the rational procedure offering the best outlook for these cases. High mortality in operative cases was among those which had been allowed to pass on to suppuration and perforation.

REVIEWS.

DISEASES OF THE HEART. By Prof. Th. von Jürgensen, of Tübingen; Prof. Dr. L. Krehl, of Greifswald; and Prof. Dr. L. von Schrötter, of Vienna. Edited, with additions, by George Dock, M.D. W. B. Saunders Company, Philadelphia, 1908. Price $5.00.

This is one of the series of volumes comprising Nothnagel's Practice. A number of these volumes have already appeared and have been well received by the profession, because they have been prepared in Germany by men who are recognized authorities, and have been revised and edited in this country by men who were well selected for the performance of their office. The present volume contains nearly 900 pages, and is perhaps the most exhaustive single volume dealing with diseases of the heart that exists in the English language, being far larger than the classical book of Broadbent for example. The opening chapter deals with insufficiency or weakness of the heart, and covers 125 pages. The second chapter is upon endocarditis and covers a little over 100 pages; that on valvular disease covers 115 pages; and the remainder of the book, or about one-half, deals with diseases of the myocardium and the nervous diseases of the heart and with diseases of the pericardium, the latter taking up only about 60 pages, so that about 350 pages are used in discussing diseases of the myocardium. It is this latter section upon diseases of the myocardium and the nervous diseases of the heart which should be perused most carefully by the physician and student of to-day, since although the diseases of the heart muscle and its blood-vessels and nerves have been recognized as of importance within the last few years much better than ever before, they still need graver study than they receive at the present time. Indeed, we fear that too many practitioners are prone to study the valvular lesions but pay too little attention to myocardial changes, first, because their importance is not recognized, and secondly, because it is difficult to be as positive concerning their nature and distribution as it is possible to be in connection with valvular lesions.

The editing of the present volume by Dr. Dock has been well done. Sometimes it requires more skill to hold the hand than to use it, and this fact has been recognized by Dr. Dock, who tells us that he has found nothing that seemed necessary to omit, and in only one instance has he modified what seemed to him the meaning of the author in order to make the text more accurate and clear to the American reader. Dr. Dock has also made the medicinal preparations conform to those of the United States Pharmacopœia, so as to make the therapeutics which is recommended by the authors more readily applicable by American readers. We can cordially commend this volume as a most excellent presentation of the subject of cardiac diseases from every standpoint.

THE INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Original Articles Dealing with the Various Branches of Medicine. Edited by W. T. Longcope, M.D. The J. B. Lippincott Company, Philadelphia, 1907.

This volume (IV of the 17th Series of International Clinics) contains a very considerable number of articles of interest and importance. It opens with one by J. N. Henry, M.D., of Philadelphia, upon the Treatment of Tetanus by Intraspinal Injections of Magnesium Sulphate, with a report of four cases. This is followed by one upon the Value of the Roentgen Rays and Arsenic in the Treatment of Leukemia by A. S. Warthin, M.D., of Ann Arbor, Mich., and this in turn by one on the Treatment of Hemoptysis in Pulmonary Tuberculosis by A. P. Francine, of Philadelphia. There is also an article by Weil, of Paris, upon the Injection of Fresh Blood Serum in Blood States that Give Rise to Hemorrhage, and another by Chantemesse, of Paris, upon Five Years' Experience with Antityphoid Serum, an article which from its importance is one of the most interesting of the volume. There are a considerable number of articles upon Medicine, Surgery, Gynecology, Genito-urinary Diseases, Orthopedics, Neurology, and Otology in the same issue. The article by Dr. Henry K. Pancoast,

upon "Gastroptosis from the Radiographic Standpoint," we thought had appeared elsewhere, certainly the illustrations are familiar to us, but to those who have not seen them they possess great interest and importance. The present volume fully maintains the standard set by its predecessors.

DISEASES OF THE NOSE. By Ernest B. Waggett, M.A., M.B., B.C. Henry Frowde, Oxford University Press, 1907.

This small book upon this subject, which only contains twenty or twenty-one lines to the page and about ten words to the line, is intended to be read, as it was written, "rapidly from cover to cover," to use the author's words. The illustrations were, most of them, made from nature, by the author, and some of them are exceedingly crude, as on page 5. We confess that we cannot see any advantage in the publication of a volume of this kind. It was evidently hurriedly prepared, and is far too brief to present the important subject with which it deals in an adequate manner.

AIDS TO DENTAL SURGERY. By Arthur S. Underwood, M.R.C.S., L.D.S., and Douglass Gabell, M.R.C.S., L.D.S. Second Edition. William Wood & Co., New York, 1907. Price $1.00.

This small pocket manual deals with the science of dental surgery in a very condensed form, there being only 126 duodecimo pages, including the index. Starting out with the bacteriology of the mouth, it proceeds from the hygiene and care of the teeth and mouth to the abnormalities of temporary and permanent dentition. It then discusses dental caries, diseases of the periosteum, the extraction of teeth, injuries and diseases of the jaws and of the teeth and gums. It is surprising how much information is given between its covers.

A MANUAL OF CLINICAL CHEMISTRY. By A. E. Austin, A.B., M.D. D. C. Heath & Company, Boston, 1907.

In his preface Dr. Austin points out that there are three classes of text-books in existence for the teaching of chemistry to medical students: First, the large encyclopedic medical chemistries; secondly, the so-called physiological chemistries, which are more adapted to academic than to medical education; and thirdly, a collection of excellent books which give modern methods of analysis for clinical purposes. As it is often essential that a student should use all three of these books in order to obtain the information that he needs, Dr. Austin has attempted to cover them in one volume, combining the practical part of all three, and ignoring all that is not of direct benefit to the medical man. In an appendix all the reagents needed for the experiments named are given, with brief descriptions of the methods of making them. The book covers 271 small octavo pages, has already been well received, and is becoming more popular as it becomes better known.

DISEASES OF CHILDREN FOR NURSES. By Robert S. McCombs, M.D. W. B. Saunders Co., Philadelphia and London, 1907. Price $2.00.

The object of this book is manifest from its title, which is based upon a series of lectures given to the nurses of the Children's Hospital, Philadelphia, one of the best institutions in this country in its line. Much of the information is taken from Stevens's "Manual of Medicine" and from Holt's "Infancy and Childhood." The book is well prepared and will prove useful to the class for which it is intended. Indeed, much of the information which is given will be found exceedingly useful by both old and young practitioners. Too little attention is paid in many text-books to the small details which are essential for successful practice by the physician and nurse. In this volume these small and exceedingly useful details can be readily found in profusion.

MORTMAIN. By Arthur Train. D. Appleton & Company, New York, 1907.

This is a novel written by an active practitioner of law in New York. The scene is chiefly laid in the city of New York, and the theme deals largely with the question of limb grafting, or the ability to replace or supplant a limb which has been removed by accident or otherwise. In other words, it is a novel with a distinctly medical flavor, and will without doubt prove of interest to a very considerable number of our readers who, on the one hand, wish to amuse themselves with something medical, and yet are desirous of resting after a day's work by reading fiction.

AIDS TO THE DIAGNOSIS AND TREATMENT OF DISEASES OF CHILDREN. By John McCaw, M.D. Third Edition. William Wood & Co., New York, 1907. Price $1.25.

By means of small type and close printing a very large amount of information is included in this little volume. The first 10 pages are devoted to the anatomy and physiology of infancy and childhood; the next 14 to the hygiene and diet of infants and children; 32 pages suffice to cover injuries and diseases of the newly-born; 52 pages are devoted to diseases of the digestive system and related organs, and 56 to the specific fevers. Forty are given to diseases of the respiratory system, but only 12 to diseases of the circulatory apparatus. Fifty-one pages are used in a discussion of diseases of the nervous system, and the remaining 100 pages deal with diseases of the urinary system, general diseases, blood diseases in infancy and childhood, disease of the thyroid gland, and an appendix containing dietetic directions and methods of using antipyretics, emetics, and narcotics. The last few pages contain prescriptions which the author thinks advisable, and an index. The book is, of course, too brief to justify its use in place of the larger manuals, but it is an excellent one to be used in conjunction with them.

DISEASES OF THE LARYNX. By Harold Barwell, M.B., F.R.C.P. Henry Frowde, Oxford University Press, 1907.

The author states that he is glad to have the opportunity of writing this little treatise, because while there are several excellent works of larger size on the subject for the specialist, it has long seemed to him that a smaller manual of diseases of the larynx was needed for the use of the general practitioner and student. This may be true, but the present volume is far too brief to adequately discuss the subject of which it treats. The illustrations are far better than those which are found in the little book on diseases of the nose which we have already referred to, and what is said concerning the conditions discussed is accurate and correct. The volume closes with a number of prescriptions, which will perhaps prove more valuable to our readers than the rest of the text.

APPLIED PHYSIOLOGY. By Frederick A. Rhodes, M.D. The Medical Press, Pittsburg, Pa., 1907.

Dr. Rhodes, who is the Professor of Physiology and Embryology in the Medical and Dental Departments of the Western University of Pennsylvania, has prepared this little handbook in order to present to the students of medicine the physiological explanation of the important and frequent symptoms of disease. He starts out with a brief description of the physiology of the more important organs, and then attempts to give the physiological or pathological explanation of symptoms which are developed when the patient is ill. Thus, under the head of Heart Block or Stokes-Adams Disease he points out that the condition may be partial or complete, and that it may be of two kinds—one organic, due to a lesion in the bundle of His, or, secondly, the failure of the ventricle to follow all impulses of the auricle, due to overaction of the vagus. We think that the author has made an effort in the right direction, but regret that his text is sketchy, or, in other words, insufficiently developed.

HEART DISEASE AND THORACIC ANEURISM. By F. H. Poynton, M.D., F.R.C.P. London. Henry Frowde, Oxford University Press, 1907.

The fact that Dr. Poynton is one of the assistant physicians at University College Hospital and also a physician at the Great Ormond Street Hospital for Sick Children has given him large clinical advantages, and these he has utilized in the preparation of this small book, which is very well illustrated, and which is an adequate presentation of the subject of which it treats. Most of the illustrations are taken from other sources, but are well utilized and well executed. The part devoted to aneurism is unfortunately brief, particularly those portions which are devoted to the discussion of the pathology of the affection. So, too, in the discussion of the treatment of aortic aneurism, while considerable space is given to the use of gelatin, nothing is said concerning the advantages of the use of wire and electrolysis. The volume closes with a number of prescriptions which are useful in cardiac disease, and with some "diets" which are also of value in this class of cases.

SURGERY: ITS PRINCIPLES AND PRACTICE. By Various Authors. Edited by William Williams Keen, M.D., LL.D. Volume III, Illustrated. W. B. Saunders Company, Philadelphia and London, 1908.

The first section of the third volume of Surgery, devoted to Affections of the Head, by Harvey Cushing, is a most scholarly, satisfactory, and practical monograph upon the subject. There is a brief anatomical discussion of the external coverings and bones of the skull, with a consideration of their surgical affections. A convincing argument is made for early operation for the relief of intracranial hemorrhage incident to injury to the head of the new-born. The section devoted to the cerebral envelopes and their diseases is particularly to be commended. This may also be said of the admirable summary of the symptomatology of organic lesions of the brain. Concussion and physiological effects of compression are considered at length. Injuries and diseases of the cerebral blood-vessels, some sequelæ and injuries of the brain, and the technique of intracranial operations are subjects most excellently summarized.

Surgery of the Neck, by Wyllys Andrews, begins with a consideration of embryonal cysts and fistulæ, after which follow wry-neck, suppurative processes, cervical ribs, ligneous abscess of the neck, diseases of the glands and lymph vessels, a few paragraphs upon the carotid body, contusions and wounds, tumors, affections of the salivary glands, and operations upon the neck. In this last section Crile's methods and his admirable results are given in considerable detail. This chapter ends with a brief section upon the thymus gland.

Diseases of the Thyroid Gland, by Albert Kocher, include the anatomy, relations, and structure of this gland, together with its functions and those of the parathyroids. Thereafter follow functional diseases of these glands, goitre, acute thyroiditis, strumitis, syphilis and tuberculosis, malignant degeneration, and disease of the parathyroid gland.

This comparatively brief section covers the field in a satisfactory manner.

The section devoted to the Nose and Accessory Sinuses, by Harmon Smith, after some pages devoted to the anatomy and the methods and instruments of examination, takes up the various abnormalities and diseases, with careful consideration of the methods of diagnosis and the technique of surgical treatment. The section is concluded by a discussion of Affections of the Nasopharnyx, including malignant tumors.

Surgery of the Larynx and Trachea is written by George Emerson Brewer. He describes Killian's method of tracheoscopy and bronchoscopy and concludes his article with an excellent description of the most approved operations upon the larynx and trachea. To the same author has been allotted Surgery of the Thorax. In the portion of the chapter devoted to operations due mention is made of the Sauerbruch cabinet.

Surgery of the Breast, by Finney, is written from the standpoint of a widely experienced and observant surgeon who knows what his colleagues most desire from him. It is a paper with which every operative surgeon should be familiar.

Surgery of the Mouth, Teeth, and Jaws, by Edmund Owen, very satisfactorily summarizes the commonly accepted teachings.

Surgery of the Tongue, by J. Chalmers Da Costa, and Technique of Abdominal Surgery and Surgery of the Retroperitoneal Space, by John C. Munro, include all that is best and most modern on these subjects. The section on Peritonitis is especially to be commended.

Surgery of the Esophagus, by George Gottstein, is an excellent practical section on this subject.

Surgery of the Stomach, by Mayo Robson, is a truly admirable section marked by clear expression of individual views and by wise conservatism likely to be most helpful to those of lesser experience who are inclined to regard operation in some form as necessary in all intractable affections of the stomach. This same criticism applies with equal force to Surgery of the Liver, Gall-bladder, and Biliary Ducts by Charles H. Mayo, and Surgery of the Pancreas by B. G. A. Moynihan. Indeed, these three articles are models of logical arrangement, clear expression, and the practical application of

knowledge gained from a large clinical material keenly observed and skilfully treated.

This third volume makes both the surgeon and practitioner eager for the completion of this splendid work.

A Manual of Venereal Diseases. By Sir Alfred Keogh, K.C.B., Lieut.-Colonel C. H. Melville, R.A.M.C., Lieut.-Colonel Leishman, R.A.M.C., and Major C. E. Pollock, R.A.M.C. Hodder & Stoughton, London, England, 1907.

This manual is, according to the statement of its editor (Charles H. Melville), intended to act as a convenient primer for the use of the army medical officer, to assist him in his daily work in the prevention and treatment of venereal diseases. Nor is it in the least intended as an exhaustive treatise on these topics. It is based on the report of the subcommittee of the Army Medical Advisory Board, in which is to be found summarized an enormous amount of collected information and many useful recommendations. The teachings of the book are, of course, based upon the experience gained in the study of the material available in the British army.

Keogh, in his introduction, states that the chances of avoiding infection are in direct proportion to the extent to which cleanliness and personal hygiene are practiced by those who run the risk of infecting or of being infected. He notes that it is a significant fact that the two great Anglo-Saxon states, whose attitude in opposition to legislative control is similar, have a far higher incidence of venereal diseases in their armies than has any other country.

In the chapter devoted to Methods of Prevention there is an extremely valuable subsection summarizing the measures adopted for prophylaxis in armies, together with a comparison of the incidence of venereal disease in the European armies.

The second chapter is devoted to the definition and the pathology of Syphilis. The Spirochæta is considered the probable cause. Its staining and identification are elaborately described.

The chapter devoted to Diagnosis is particularly to be commended because of its sound common sense. As to treatment the statement is definitely made that there is only one drug which possesses the power of curing syphilis, that consequently it is our sheet-anchor at any and every stage of the disease. This teaching cannot be too widely diffused. Although proven beyond controversy it is still accepted with reluctance by those with little experience. It is further stated that overtreatment is nearly as harmful as undertreatment, and that each case must be treated on its merits.

Treatment with mercury is advised as soon as the diagnosis of syphilis is made, if not before. It is further stated that if we adopt two years' treatment as the working rule the proportion of tertiary syphilis should not exceed five per cent of the number of those who contract syphilis, and that more than one-third of this percentage will not manifest symptoms until after the expiration of the soldier's contract with the state. Therefore the author holds that two years' treatment, if thoroughly carried out, fulfils professional obligation to the state. Preference as to the form of administration is by inunction supplemented by bath. The various other methods of introducing the drug are taken up in detail. As to the iodides, it is stated that these are in no sense a substitute for mercury even in the late stage of the disease, although they may be useful all through its course.

The chapter on Gonorrhea is an excellent one. Soft Chancre is treated briefly, diagnosis being based upon finding the Ducré bacillus.

This book is admirably designed not only for the army surgeon but for the general practitioner, and may be studied with profit by the specialist.

Diseases of the Male Generative Organs. By Edred M. Corner, M.A., M.B., B.Sc., M.C., F.R.C.S. Hodder & Stoughton, London, England, 1907.

Corner, believing that the divorce of diseases of the generative tract from those of the urinary tract would be a practical gain to the busy man, has compiled a book which, to the reviewer, would seem might prove a source of irritation rather than a fount of knowledge to him seeking help upon any genito-urinary topic.

The first chapter opens with Hydrocele of the Tunica Vaginalis. No preference is expressed in regard to treatment, though a brief space is given to tapping and injection of carbolized glycerin.

The second chapter is devoted to Physiology of the Testicle, and is singularly deficient in physiological information.

The third chapter is entitled the Wandering or Movable Testicle.

The fourth chapter, the Imperfectly Descended Testicle, is considered at length, but not in an illuminating way. To torsion of the testicle considerable space is given and some extremely interesting cases are reported. Epididymitis, orchitis, tuberculosis, cystic disease, dermoid cysts, are topics very lightly touched upon. In speaking of functional affections of the sexual organs Corner remarks that masturbation when practiced before puberty is most harmful, and not only to the mind and body but to the sexual glands, a teaching with which there will be general concurrence. He notes that practiced after puberty and without excess there is little reason to believe that harm results to the individual.

Infertility is considered very briefly. There is a short and somewhat obscure discussion of the relation of the individual to the sexual life. In disease of the spermatic cord the author justly accords greatest importance to varicocele, giving a most interesting summary of the immediate and remote results of the ordinary method of operative procedure.

Though this book does not cover any subject well, it has evidently been written by a man who has seen many clinical instances of the affections he describes, and hence necessarily contains suggestions of distinct value.

SURGICAL EMERGENCIES. By Percy Sargent, M.A., M.B., B.C. (Cantab.), F.R.C.S. Hodder & Stoughton, London, England, 1907.

This book is, the author states, in the nature of an essay based upon his experience gained during eight years' intimate association with the surgical side of St. Thomas's Hospital.

As is proper, hemorrhage receives the first consideration, and the local treatment adopted for its checking is that which is practiced in the best clinics. The slow instillation of saline by the rectum could have been described with advantage in more detail, nor is the antitoxin syringe a good instrument for the introduction of the saline subcutaneously. The transfusion of blood is not mentioned. Nor are the indications for the use of one or another method clearly indicated.

For burns and scalds the continuous bath treatment is recommended as the best, though saturated solution of picric acid receives high praise. In fracture of the patella operation is advised through a vertical incision, a method not in consonance with that usually practiced. To acute infective diseases is accorded a chapter, though the ordinary abscess can scarcely be considered a surgical emergency. Excision is advised as the best means of curing a carbuncle of moderate size. Similar treatment is in the author's opinion indicated in the treatment of cancrum oris.

Under the heading Acute Abdominal Diseases are classed those affections which require prompt surgical intervention. The surgeon is cautioned against the mistaking of lead poisoning, diarrhea with collapse, renal or biliary colic, basal pneumonia, and acute colitis for conditions which require immediate surgical intervention. This list might profitably be very greatly extended.

A large section of the book is devoted to acute abdominal affections and their surgical treatment. Respiratory obstruction is briefly considered, including under this heading respiratory difficulties under anesthesia.

The book closes with a section on the Acute Infections of the Urinary System, Acute Retention of the Urine, Urethritis, Prostatic Obstruction, Foreign Bodies in the Urethra, Extravasation of Urine, Acute Cystitis and Suppression of Urine—an excellent selection.

In addition there are chapters upon Traumatism, including Injuries and Diseases of the Ear and Eye.

This forms an excellent handbook for those who have not had the experience incident to a hospital appointment.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.D., F.R.C.P.

The Royal Society of Medicine continues to show a vitality and vigor which are in pleasing contrast with the old order of things when valuable papers were read to empty benches. Sir Thomas Barlow is president of the Clinical Section, which seems to be particularly in favor. At a recent meeting Mr. Rickman Godlee showed two interesting cases of osteoarthritis affecting joints to which there had been injury in past years; he laid stress on this tendency to osteoarthritis in a part weakened by previous injury. Several speakers brought forward confirmatory evidence in the tendency shown by various diseases to affect parts whose resistance had been diminished by traumatism. Dr. F. J. Poynton, for example, mentioned the affection of an injured joint by the diplococcus of rheumatism when this microörganism was injected into the general circulation, and Dr. A. E. Garrod instanced the localization of a first attack of gout to a joint which had been subjected to traumatism years previously. The Therapeutic and Pharmacological Section, which was but a newly-born infant so to speak when it was absorbed into the Royal Society of Medicine, continues to do excellent work. Professor Cushny recently read a very interesting paper on nutmeg poisoning: this occurs from eating the crude nutmeg or mace, and the symptoms are chiefly nervous, drowsiness, stupor, delirium, giddiness, and pain in the stomach. It would have been valuable if information had been given as to the possibility of danger from the expressed oil of nutmeg which is sometimes used as a local application, for instance to cure alopecia. This section, which although part of the corporate body of the Royal Society has its own "local habitation" at the Apothecaries' Hall, in Blackfriars, is to hold its annual conversazione this month, when Dr. Henry Campbell is to deliver an address on that *vexata quæstio* the therapeutics of diet. There is also to be a lantern demonstration of color photography which should be good, for beautiful results are being obtained by some medical workers in London with three-color photography.

The annual lectures at the Royal College of Physicians begin next month. Dr. H. French has chosen as his theme for the Goulstonian lectures, the influence of pregnancy on certain medical diseases, and the influence of certain medical diseases on pregnancy. The Lumleian lectures are always given by one of the most senior fellows of the college, and this year the choice has fallen upon Sir James Sawyer, who was formerly Professor of Medicine in Queen's College, Birmingham, and whose writings on clinical medicine are well known as most practical contributions to the subject. Another well-known authority who is to lecture this year before the College of Physicians is the distinguished physiologist Professor Schäfer, who until a few years ago was Professor of Physiology at University College, London, but resigned this post to take the chair of physiology at Edinburgh. His subject is to be the present position of our knowledge regarding the suprarenal capsules.

An interesting departure is to be made in the establishment of a tuberculosis sanatorium for children at Harpenden, near London; in support of this a great meeting was held at the Mansion House a few days ago under the presidency of the Lord Mayor. The new institution is really an outgrowth of a certain Children's Home, in which it was found that almost 25 per cent of the children admitted were suffering with tuberculosis. Sir Douglas Powell, the president of the Royal College of Physicians, and Sir Thomas Barlow both spoke warmly in sup-

port of the proposal. The latter said that consumptive children are not so much affected in the lungs, the disease in them is principally abdominal; he does not think there is great risk of spread of the infection from children, for they swallow their sputum instead of expectorating it as an adult does. At the same time he admitted there is some risk, and therefore it is well that such children should be placed in a sanatorium away from the healthy children.

The question of the registration of nurses has been much discussed recently. A bill for such registration is now before the House of Commons. It cannot be said that the matter has been dealt with precipitately, for as Lady Helen Munro-Ferguson said at a meeting held in London last week to support this bill, this is the twentieth year of effort to secure registration. She said that those who object to registration argue that technical qualifications are of less importance than gentleness and sympathy, but they forget that both might be combined, and as a matter of fact the technical training often develops gentleness and sympathy. It was urged that posing as a trained nurse without proper training is a danger to the public and an injury to the genuinely qualified nurse. Mr. Sidney Holland, the indefatigable chairman of the London Hospital, was not present at the meeting, but has delivered himself of his strong objections to any registration of nurses in a letter in the public press, in which he points out that the matrons of several of the largest hospitals in London as well as many eminent members of the medical profession believe that registration would react harmfully and not advantageously upon the profession of nursing.

There is an encouraging sign of progress toward some legislation for the restriction of the supply of filthy and infected milk. I do not mean that Parliament, which has its hands already more than full, is likely to do anything in the immediate future, but there is evidently some prospect of action at some future date, for the farmers are beginning to grow alarmed. A few days ago there was a meeting at the Hotel Métropole of the Farmers' Club to listen to a paper on "Present and Future Aspects of Dairy Regulation." The lecturer proceeded to make light of the dangers of impure milk, and to minimize the loss of infant life which is attributable without doubt to this cause. One gentleman with more ardor than knowledge said that it was time the fallacy that a great sacrifice of infant life was directly traceable to milk consumption was exploded. Another gentleman belonging to the same club mentions that a professor than whom there is, he considers, no greater authority upon all dairying matters, had been forty years looking for the tubercle bacillus in milk, and had only found it in one sample! Which suggests that a cobbler should stick to his last, and a dairyman had better leave bacteriology to those who know something about it.

Amongst the notable events of the month must be mentioned the generous offer of thirty thousand pounds by Dr. Henry Maudsley toward the cost of building a properly equipped hospital in London for the treatment and study of mental diseases. Dr. Maudsley, who has written many important works on the mind and its diseases, is one of the older members of our profession; he graduated in 1856, and delivered his Goulstonian lecture on the relation between mind and body in 1870.

A large audience listened to Mr. McAdam Eccles, assistant surgeon to St. Bartholomew's Hospital, who delivered the Lees-Raper lecture on the injurious effects of alcohol. The meeting was held at Oxford in the Town Hall, and the chair was taken by Professor Osler. The lecturer advocated very strongly the teaching of children in the elementary schools the elements of hygiene and temperance.

The death of Mr. William Allingham this month has removed one who was well known as an authority on one special branch of surgery, the diseases of the rectum. He was for years surgeon to the St. Mark's Hospital for Fistula, and started life curiously enough as an architect. He died at the ripe age of seventy-eight years.

NOTES AND QUERIES.

WHAT WE OWE TO THE MANUFACTURING PHARMACIST AND THE COMMERCIAL SCIENTIFIC LABORATORY.

The *St. Paul Medical Journal* for December, 1907, deals with this subject in the following manner:

There are some who go so far in their bitter hostility to proprietary remedies as to say that it would be better for the practice of medicine if all the manufacturing pharmaceutical concerns were out of business, and physicians had to depend entirely upon the prescription druggist. This of course is the height of absurdity, but we have heard the view openly expressed more than once. Many of the large manufacturing pharmaceutical concerns have committed offenses against legitimate medicine, are at present committing such offenses by lending their aid to the advertising quacks, and also by encouraging self-medication on the part of the public. These sins are becoming less frequent, and we believe will finally entirely cease as the result of a better understanding and closer relations between the manufacturer and the medical profession. Those who condemn broadly, and without reserve, the large manufacturing pharmacists and chemists, should pause and reflect upon the enormous debt which scientific medicine owes to these same concerns. To say nothing of the many elegant and palatable preparations which no retail druggist can duplicate, to whom do we owe the many serums, antitoxins, vaccines, animal extracts, and alkaloids without which the scientific physician could not practice his profession? We owe them to these very people whom we are condemning. Every new discovery, every new theory, which promises or even suggests a cure for some disease, is promptly put to the test in one of the great commercial laboratories, and the results announced to the medical profession. The fact that the commercial laboratory is a money-making concern, as opposed to the purely scientific laboratory which is not, does not detract at all from the value and importance of the work done in the former. The scientific laboratory, practically always a teaching laboratory connected with some medical school, could not, even if it would, take the place of the commercial laboratory, and indeed, in many instances, the discoveries made in the former are promptly communicated to the latter for the purpose of enabling it to give the benefit of the new discovery to the medical profession.

In regard to ready-made prescriptions and proprietary medicines in general, the *Journal* has always maintained that while many of them are useful, and some of them are indispensable, the physician would do better in the majority of cases to write his own prescription, if he knew how to write it and was satisfied that the prescription would be dispensed by a competent and honest druggist. It must be remembered, however, that there is a vast army of practicing physicians living in country districts remote from druggists, and where scientific prescriptions, except of the very simplest character, cannot be compounded. These physicians must and do depend for many of their medicines upon the ready-made prescription, the so-called proprietary.

The physician demands that he shall know the exact amount of each active ingredient in the medicine he prescribes, and knowing this he can prescribe intelligently. Of course the honesty of the manufacturer must be taken on faith, but so must the honesty of the retail druggist to whom a prescription is sent to be compounded. In the matter of honesty we are always at somebody's mercy in this world. So let not the profession have any quarrel with the manufacturing pharmacists; we owe them too much and we are too dependent upon them. Let us reason with them when we believe them to be doing something wrong, let us openly condemn those who are shown to be deliberately dishonest, but let us give praise and credit to those who deserve it, and let us work hand in hand for the betterment and for the uplifting of scientific therapeutics.